

TOWN COUNCIL

STAFF REPORT

Department of Growth Management



MEETING DATE:	September 11, 2018
PROJECT:	Consideration of Approval of an Amendment to the Master Plan for property referred to as Hilton Head Christian Academy – Bluffton Campus within the Buckwalter Planned Unit Development for a new K-12 School Campus and Supporting Athletic Facilities on approximately 27.78 acres located near the intersection of Bluffton Parkway and Masters Way
PROJECT MANAGER:	Kevin P. Icard, AICP Planning and Community Development Manager

REQUEST: A request for approval of an amendment to the Master Plan for Hilton Head Christian Academy – Bluffton Campus.

TOWN COUNCIL ACTION: Town Council has the authority to take the following actions with respect to this application:

1. Approve the application as submitted by the Applicant;
2. Approve the application with conditions; or
3. Deny the application as submitted by the Applicant.

INTRODUCTION: The Hilton Head Christian Academy – Bluffton Campus is located on 27.78 acres within the Buckwalter PUD. The Buckwalter Concept Plan dated April 19, 2000 was designed to be a mixed-use Planned Unit Development. The property is subject to the Buckwalter Development Agreement and the Beaufort County Zoning Development Standards Ordinance (ZDSO) 90/3.

The Hilton Head Christian Academy Initial Master Plan, and Amendments, are part of the Eastern Tract which allows for multiple land uses including but not limited to; Institutional/Civic, Multi-family Residential, and Single-family Residential development. In 2002, an Initial Master Plan was approved for the property, and later revised in April of 2004. The approved Master Plan includes a 2,000 seat football stadium, 200 seat baseball stadium, practice field, a single academic building and supporting infrastructure. (Attachment #1)

The property consists of 24.21 acres of upland property and 3.57 acres of jurisdictional wetlands. The property is bordered on the west by a wetland, to the north by Bluffton Parkway, to the east by Masters Way (and the Pinecrest Residential Community) and on the south by LowCountry Community Church. The proposed Master Plan Amendment reduces the amount of seating for the football and baseball stadiums and creates multiple education buildings where previously there was one building containing all administration and classrooms. Circulation and parking on the site have also been

addressed by changing the flow of traffic from a one-way access to multiple access points and dispersing parking throughout the site.

The Application was presented to the Development Review Committee on June 27, 2018, where comments were provided to the Applicant. It was presented to the Planning Commission for their recommendation at the July 25, 2018 meeting.

PLANNING COMMISSION RECOMMENDATION: The Town of Bluffton's Planning Commission voted at their July 25, 2018 meeting to recommend that Town Council approve the Master Plan Amendment request with the following conditions:

1. Based on the recommendation from the Traffic Impact Analysis, the following improvements must be completed prior to the issuance of a Certificate of Occupancy for Phase 3 (Administration and Lower School Building) as shown on the Hilton Head Christian Academy Phasing Plan.
 - a. Optimize the signal timing splits at the Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard intersection;
 - b. Install a westbound right-turn lane on H.E. McCracken Circle at the Buckwalter Parkway at H.E. McCracken Circle (north) intersection;
 - c. Redesign and signalize the intersection of Bluffton Parkway at Masters Way/Crossings Boulevard to meet the current Beaufort County standards, install a northbound left-turn lane on Masters Way, and review the design criteria of the intersection including sight distance, turn radii, etc.;
 - d. Install a southbound right-turn lane on Masters Way at the H.E. McCracken Circle (north) intersection;
 - e. Design the Bluffton Parkway at Site Driveway #1 intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.;
 - f. Include exclusive left-turn and right-turn lanes exiting the site at the Site Driveway #1 onto Bluffton Parkway;
 - g. Install a southbound right-turn lane on Masters Way at Site Driveway #3;
 - h. Include exclusive left-turn and right-turn lanes exiting the site at Site Driveway #3 onto Bluffton Parkway;
 - i. Stratify the bell schedule from existing schools in area to limit overlap of traffic;
 - j. Stagger upper and lower school bell schedules;
 - k. Coordinate with the Pinecrest neighborhood regarding Site Driveway #2; and,
 - l. Coordinate with the Town of Bluffton on an event management plan as needed.
2. Provide documentation that the Applicant has purchased the 10.3 wetland mitigation credits from an approved mitigation bank.

Since the July 25, 2018 Planning Commission meeting, the Applicant has provided documentation of the purchased of the 10.3 wetland mitigation credits.

ANALYSIS: During the July 25, 2018 Planning Commission meeting staff addressed multiple concerns related to the Master Plan Amendment including; tree preservation, large event parking, sports field location & lighting, internal circulation and traffic mitigation, stormwater impacts, open space and buffering, citizen comments, phasing and utilities.

1. **Tree Preservation:** Section 5.2.7.4 of the Zoning and Development Standards Ordinance 90/3 (ZDSO 90/3) requires the preservation of significant trees (trees over 24 inches in diameter at breast height) to the greatest extent practicable. In 2004, the School received approval to clear, grade and install the sports fields on the property, however only the baseball field was completed. (Attachment #3)

The remainder of the site consists of existing planted pines and various stages of regenerative pine growth. One significant tree (a 33" Black Gum) is located in a wetland that is proposed to be filled. The Applicant has stated that mitigation for the tree will occur during the Development Plan Review Process. Staff recommends that the mitigation of the black gum be included in the conditional approval, if the Amendment is approved. The mitigation should consist of replacing the 33" Black Gum with the same species totaling the same number of inches in diameter as stated in Section 5.2.7.4 Site Design Emphasis on Significant Trees (Beaufort County ZDSO 90/3).

2. **Large Event Parking:** The Applicant was asked how the site will handle overflow parking during large events (football, graduation, etc.). The Applicant has provided an Exhibit showing that the practice field will be used as overflow parking and provides approximately 222 additional parking spaces beyond the required 208 paved spaces for a total of 430 parking spaces. (Attachment #2)
3. **Sports Field Location & Lighting:** Staff expressed to the applicant that the stadium may be more successful at a location where the lights and sound produced by the stadium will have less impact on the neighboring residential community. As the current Master Plan approved in 2002 shows the stadium along Bluffton Parkway, staff suggested it remain at that location. The Applicant has provided an exhibit showing the approved and proposed location of the football/soccer stadium in relation to the homes in Pinecrest that are within 1,000 ft. and 1,500 ft. of the stadiums. (Attachment #9)

Due to the proximity of the football and baseball stadium to the existing Pinecrest neighborhood, Staff requested additional information on the lights that will be used on the fields. The Applicant has stated that they plan to use the existing poles at the baseball field; however, they will install the lights as a directional LED system. The football and baseball stadiums will use a directional LED system that is designed to light only the area desired to be lit and reduce the illuminated foot candle to zero before it crosses the property line. In addition to the exhibit included in attachment six, the lighting plan will be reviewed at the time of the Development Plan Review process for compliance with Beaufort County ZDSO 90/3. (Attachment #6)

4. **Internal Circulation:** In the 2002 Initial Master Plan, the site was designed to have all traffic enter from Bluffton Parkway as one-way traffic and exit on Masters Way. The proposed Master Plan Amendment has three connection points. One entry is located on Bluffton Parkway and two are located on Masters Way. Students attending the elementary school have different loading and unloading needs than children in middle school and high school. Typically, teachers are there to assist

elementary age students to get in and out of vehicles.

The multiple access points provide separation between buses, parking and the queuing of drop-off/pick-up. The proposed plan includes a divided student drop off circulation plan. High school students and buses will access the parking lot through the northern driveway located on Masters Way, elementary school students will access have from the main entrance at Bluffton Parkway and middle school students will be dropped off using the southern access point on Masters Way.

5. Traffic Mitigation: The TIA (Traffic Impact Analysis) reflects the modified circulation pattern and includes multiple infrastructure improvements. The traffic engineer's recommendations for the 2020 Phase 1 which includes the construction of the sports fields, parking, Administration and Elementary building, the Middle School building and the Gym (Attachment #4):

1. Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
 - a. Optimization of the signal timing splits for intersection
2. Buckwalter Parkway at H.E. McCracken Circle (north)
 - a. Installation of a westbound right-turn lane on H.E. McCracken Circle
3. Bluffton Parkway at Masters Way/Crossing Boulevard
 - a. Signalization of the intersection including the redesign of the intersection to current Beaufort County standards including the installation of a northbound left-turn lane on Masters Way and a review of the design criteria of the intersection including sight distance, turn radii, etc.
4. Masters Way at H.E. McCracken Circle (north)
 - a. Installation of a southbound right-turn lane on Masters Way
5. Bluffton Parkway at Site Driveway #1
 - a. Design intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.
 - b. Exclusive left-turn and right-turn lanes exiting the site
6. Masters Way at Site Driveway #3
 - a. Installation of a southbound right-turn lane on Masters Way
 - b. Exclusive left-turn and right-turn lanes exiting the site
7. Stratify bell schedule from existing schools in area to limit overlap of traffic
8. Stagger upper and lower school bell schedules
9. Coordinate with the Pinecrest neighborhood regarding Site Driveway #2
10. Coordinate with Town of Bluffton on an event management plan as needed

Since the July 25, 2018 Planning Commission meeting, the Applicant has provided an exhibit showing the locations of the improvements (Attachment #8).

6. Wetlands & Stormwater Management: There are 3.57 acres of wetlands located on the property. The Applicant has an approved wetland impact permit from the United States Army Corp of Engineers (USACE) to impact/fill 1.03 acres of these wetlands for development. A condition of the permit approval required the Applicant to purchase 10.3 wetland mitigation credits from an approved mitigation bank. The US Army Corps permit states, "the permittee agrees to purchase or debit a total of 10.3 credits from the Sweetleaf Swamp Mitigation Bank." Sweetleaf

is located in Mt. Pleasant, SC and they provided a quote for 10.3 credits in the amount of \$81,360.00. The school has purchased the credits and has provided a copy of the receipt to US Army Corps in order for them to initiate the wetland fill work. (Attachment #7)

Stormwater runoff generated from impervious areas will be collected by swales, inlets, or flow via overland flow into multiple bio-retention areas before discharging into wet detention ponds. The combined SWM facilities will have the capacity to control peak runoff rate and treat water quality. The site will be designed to meet the Town of Bluffton Stormwater requirements which exceed South Carolina Department of Health and Environmental Control (SCDHEC) water quantity and quality regulations, with review during Development Plan review process.

7. **Open Space & Buffer:** The property is 27.78 acres, a total of 24.6% or 6.83 acres will be impervious surfaces. The remainder of the property will consist of open space, retained wetlands, adjacent use and street buffers, landscape buffers, detention ponds, recreation facilities and undeveloped green space. A 20 ft. buffer is required along the entirety of the wetlands. A 50 ft. landscape easement is required on Bluffton Parkway, which contains utilities and an existing path. A 30 ft. roadway buffer is required along Masters Way and a 20 ft. adjacent use buffer is located along the adjacent church property.

The Applicant has indicated that a series of walkways, paths and trails will link the internal pedestrian connections to the existing multi-use pathways located on Bluffton Parkway and Masters Way. These will be reviewed at the Development Plan review process for compliance to the Master Plan and applicable codes.

8. **Citizen Comments:** During public comment period at the July 25, 2018 Planning Commission meeting, two (2) residents from the Pinecrest community spoke in opposition with concerns related to:

- The stadium's proximity to residential homes, as it relates noise and lighting;
- The current traffic on Masters Way that is impacting the Pinecrest Community;
- Lack of parking at the school; and,
- Concerned that students from Bluffton High School are parking at the Pinecrest Amenity Center and walking to school.

Seven (7) individuals spoke in support of the school, topics included the following:

- The School (HHCA) will be an asset to the Town, and is providing an alternative school to help alleviate overcrowding in Beaufort County School District;
- Traffic will improve dramatically since the school would be required to install a traffic light at the intersection of Masters Way and Bluffton Parkway at the expense of the school;
- The School plans to be a good neighbor to the Pinecrest community, they plan to inform parents and any student drivers that they would not be allowed to use Pinecrest Way as an alternative route (minus any individuals that live in Pinecrest and attend the school); and,
- The Headmaster stated that there were no plans for the gym to be a performing arts center.

Additional concerns were emailed to Town Council prior to the July 25th Planning Commission meeting including traffic on Masters Way, the bell schedule, and insufficient parking. (Attachment #5)

9. **Phasing:** A Phasing Plan is included in the submitted Application. Below is a breakdown of the school's intended construction schedule which will be considered as part of the Development Plan review process. (Attachment #2):

- *Phase 1* - includes clearing, grubbing, grading, irrigation, grassing of the proposed athletic field, reorientation of the baseball field, associated detention pond and instillation of the parking lot across from Pinecrest Way.
- *Phase 2* - includes the construction of the internal driveways, parking lots and final detention pond.
- *Phase 3* - includes the construction of the Administration and Elementary School building.
- *Phase 4* - includes the construction of the Middle School building.
- *Phase 5* - includes the construction of the Gymnasium/PAC building.
- *Phase 6* - includes the construction of the future HEART (Administration/Classrooms) building.
- *Phase 7* - includes the construction of the future Middle School building. The existing middle school building would then function as the High School building.

10. **Utilities:** Utility services are be provided by the following:

1. Potable Water Distribution – Beaufort Jasper Water and Sewer Authority
2. Wastewater Collection – Beaufort Jasper Water and Sewer Authority
3. Power Supply and Service – Palmetto Electric Cooperative, Inc.
4. Telecommunication Service – Hargray Communications
5. Fire protection – Bluffton Township Fire District

REVIEW CRITERIA & ANALYSIS: Town Council is required to consider the criteria set forth in Section 3.9.3 of the Unified Development Ordinance in assessing an application for a Master Plan. These criteria are provided below followed by Staff's Finding(s).

1. **Section 3.9.3.B.** Promotion of and consistency with the land use goals, environmental objectives and overall intent of the policies within the Comprehensive Plan.

Finding. The application is consistent with the Comprehensive Plan.

The Community Facilities Chapter within the Comprehensive Plan includes facilities, services and activities essential to the growth, development or redevelopment of the community. The presence of a strong school system in or near a town contributes to the Town's quality of life. The goal of this chapter is to maintain involvement with planning and locating school facilities. The relocation of Hilton Head Christian Academy to Bluffton provides an alternate education program for children in the region while reducing the burden on the public school system.

The Transportation element of the Comprehensive Plan promotes vehicular and

pedestrian connectivity with adjacent properties and improvements to the existing transportation infrastructure. This plan proposes improvements to Bluffton Parkway, Masters Way and H.E. McCracken Road, to help lessen congestion with the installation of a traffic signal at Bluffton Parkway and Masters Way.

2. **Section 3.9.3.C.** Consistency with the intent of the Planned Unit Development Zoning District as prescribed in this Ordinance.

Finding. This request is consistent with the Buckwalter Concept Plan, Development Agreement and Beaufort County Zoning and Development Standards Ordinance (ZDSO) 90/3.

The goal of the development of the Buckwalter Concept Plan is to produce high quality, environmentally sensitive communities. Hilton Head Christian Academy Master Plan is being developed as a part of the Eastern Tract (institutional/civic land use designation) of the overall Buckwalter Concept Plan. The campus will create an alternative learning institution serving the residents of Bluffton and the greater Beaufort County area. The campus is designed to provide educational opportunities inside and outside the classroom. The development of this site is consistent with the requirements in the Beaufort County ZDSO 90/3.

3. **Section 3.9.3.D.** As applicable, consistency with the provisions of the associated Development Agreement and/or PUD Concept Plan.

Finding. The application is consistent with the provisions of the Buckwalter Development Agreement.

This Application proposes an institutional use in compliance with the development standards and density prescribed within the Buckwalter PUD and Development Agreement. This Application complies with all Amendments adopted since the original Concept approval including traffic mitigation as outlined in the Traffic Impact Analysis submitted with the application. As a result, the Application is consistent with the intent of the Buckwalter Concept Plan and Development Agreement.

4. **Section 3.9.3.E.** Compatibility of proposed land uses, densities, traffic circulation and design with adjacent land uses and environmental features, as well as the character of the surrounding area.

Finding. The application is compatible with the surrounding area.

The Application does not propose any modifications to the approved land uses, and density, however, it does modify access to Bluffton Parkway. The Traffic Impact Analysis that was submitted with this Application recommends multiple improvements to the road network surrounding the school. These improvements will allow for increased safety at the intersection of Bluffton Parkway and Masters Way. Improvements to the internal circulation allows for multiple access points, the approved Master Plan allowed limited access with only a one-way circulation pattern.

The buildings are designed in a campus style grouping with multiple parking nodes to provide easier access to the buildings and breaks apart the previously approved large parking lot. Conformance with approved access locations and compliance with wetland preservation requirements, tree coverage, stormwater methods are consistent with the approved Concept Plan and character of the surrounding area. These items will be reviewed at time of Development Plan review.

5. **Section 3.9.3.F.** Ability to be served by adequate public services, including, but not limited to, water, sanitary sewer, roads, police, fire, and school services. For developments that have the potential for significant impact on infrastructure and services the applicant shall be required to provide an analysis and mitigation of the impact on transportation, utilities, and community services.

Finding. The property is able to be served by adequate public services and has previously provided an analysis and mitigation measures on the impact on transportation, utilities, and community services with the Buckwalter Development Agreement and Concept Plan.

The proposed Master Plan is in an existing PUD where much of the infrastructure including roadways, sanitary sewer, solid waste, drainage, potable water, electricity, telephone and cable, have been contemplated during the creation of the PUD. Additional improvements to the County's roadway system will be required. These improvements will be reviewed during the Development Plan review process.

6. **Section 3.9.3.G.** Demonstration of innovative site planning techniques that improve upon the standards in other allowable Town of Bluffton zoning districts with the purpose of enhancing the Town of Bluffton's health, safety and welfare.

Finding. The Master Plan includes innovative site planning techniques that enhance the Town's health, safety, and welfare.

The proposed Stormwater Master Plan is designed to preserve existing freshwater wetlands and filter storm water through a lagoon system, or equivalent Best Management Practices (BMP), prior to being released to proposed surface waters or wetlands. The BMP stormwater treatment will meet or exceed the requirements set forth in the Town of Bluffton's Storm Water Manual.

During Development Plan Review process, the Applicant will be required to make necessary improvements to the existing road network per the Traffic Impact Analysis that will provide safer conditions at Masters Way and Bluffton Parkway.

7. **Section 3.9.3.H.** Ability of the site to sufficiently accommodate the densities and land use intensities of the proposed development.

Finding. The property is able to sufficiently accommodate the proposed development.

This Application does not propose any modifications to the approved density or land use then what was previously approved with the Buckwalter PUD and

Development Agreement. As a result the application is consistent with this requirement.

8. **Section 3.9.3.I.** Conformance with adopted or accepted plans, policies, and practices of the Town of Bluffton.

Finding. The application is in conformance with the Town of Bluffton Comprehensive Plan, the Buckwalter Concept Plan, Development Agreement, the Town of Bluffton Unified Development Ordinance, Beaufort County ZDSO 90/3, and the Beaufort County Community Development Code, Appendix C: Area Specific Access Management Standards.

The Comprehensive Plan recognizes the systematic growth of Bluffton within the Buckwalter Planned Unit Development. The property is located in the Eastern Tract of the Buckwalter Concept Plan which allows for civic/institution uses by right. The Master Plan, as submitted, is in compliance with the Beaufort County ZDSO 90/3 by meeting regulatory code requirements including minimum open space, highway buffer and adjacent property buffer requirements. The traffic mitigation improvements increase access and safe movements at multiple intersections. As a result the Application is consistent with this requirement.

CONDITIONS TO CONSIDER: Should Town Council desire to consider approval of the request, Planning Commission as well as Staff, propose the following conditions:

1. The following improvements must be completed prior to the issuance of a Certificate of Occupancy for the Administration and Elementary School Building (Attachment #8):
 - a. Optimize the signal timing splits at the Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard intersection;
 - b. Install a westbound right-turn lane on H.E. McCracken Circle at the Buckwalter Parkway at H.E. McCracken Circle (north) intersection;
 - c. Redesign and signalize the intersection of Bluffton Parkway at Masters Way/Crossings Boulevard to meet the current Beaufort County standards, install a northbound left-turn lane on Masters Way, and review the design criteria of the intersection including sight distance, turn radii, etc.;
 - d. Install a southbound right-turn lane on Masters Way at the H.E. McCracken Circle (north) intersection;
 - e. Design the Bluffton Parkway at Site Driveway #1 intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.;
 - f. Include exclusive left-turn and right-turn lanes exiting the site at the Site Driveway #1 onto Bluffton Parkway;
 - g. Install a southbound right-turn lane on Masters Way at Site Driveway #3;
 - h. Include exclusive left-turn and right-turn lanes exiting the site at Site Driveway #3 onto Bluffton Parkway;
 - i. Stratify the bell schedule from existing schools in area to limit overlap of traffic;
 - j. Stagger upper and lower school bell schedules;
 - k. Coordinate with the Pinecrest neighborhood regarding Site Driveway #2; and,

- I. Coordinate with the Town of Bluffton on an event management plan as needed.
2. Require that Hilton Head Christian Academy's parents and students not use Pinecrest Way as a through traffic into the Pinecrest community by installing signs at all driveways exiting the property.
3. Relocate the proposed Football/Soccer Stadium to a location that is not adjacent to the Pinecrest community along Masters Way.
4. The 30 ft. buffer located along Master Way and the 50 ft. buffer located along Bluffton Parkway shall not be disturbed and additional understory shrubs and trees shall be installed to create an opaque buffer along Masters Way and Bluffton Parkway similar to the requirements set forth in Section 4.23.2.1 Highway Buffer in the Beaufort County (ZDSO) 90/3.
5. Any lights used for athletic fields must be designed to have a foot-candle reading of zero at the property line and glare shields will be used on all lights to prevent excessive glare off site.
6. The Applicant must mitigate the 33" Black Gum proposed for removal, as shown on the tree survey, with the same species totaling the same number of inches in diameter as stated in Section 5.2.7.4 Site Design Emphasis on Significant Trees (Beaufort County ZDSO 90/3). Approximately thirteen (13) 2.5" DBH Black Gum trees on the property with placement approved through the Development Plan review process.

NEXT STEPS: Town Council Consideration:

Master Plan Procedure	Step Completed	Date Completed
Step 1. Pre-Application Meeting	✓	February 22, 2018
Step 2. Application Check-In Meeting	✓	May 30, 2018
Step 3. Review by UDO Administrator	✓	May 30, 2018
Step 4. Development Review Committee Meeting	✓	June 27, 2018
Step 5. Planning Commission Recommendation	✓	July 25, 2018
Step 6. Town Council Consideration of Approval by Majority Vote	✓	September 11, 2018

ATTACHMENTS:

1. Application, Narrative and Approved Master Plan
2. Master Plan Maps



3. 2004 Aerial Map
4. Traffic Impact Analysis
5. Citizen Comments
6. Lighting Plan
7. HHCA Proof of Mitigation Credit Purchase
8. HHCA Traffic Improvements
9. Stadium Placement
10. Proposed Recommended Motion



**TOWN OF BLUFFTON
PLANNED UNIT DEVELOPMENT (PUD)
MASTER PLAN APPLICATION**

ATTACHMENT 1

Growth Management Customer Service Center
20 Bridge Street
Bluffton, SC 29910
(843)706-4522
www.townofbluffton.sc.gov
applicationfeedback@townofbluffton.com

Applicant		Property Owner	
Name: Dee Dee Graham		Name: Hilton Head Christian Academy	
Phone: 843.384.3964		Phone: 843.681.2878	
Mailing Address: 118 Myrtle Island Rd Bluffton, SC 29910		Mailing Address: 55 Gardner Drive Hilton Head Island, SC 29926	
E-mail: Cisco5@Hargray.com		E-mail: Dlanghals@hhca.org	
Town Business License # (if applicable):			
Project Information			
Project Name:		<input type="checkbox"/> New	<input checked="" type="checkbox"/> Amendment
Project Location: Corner of Bluffton Pkwy & Masters Way		Acreage: 27.78 AC	
PUD Name: Buckwalter PUD			
Tax Map Number(s): R6100030-000-0442-0000			
Project Description: New K-12 School campus and supporting athletic facilities.			
Minimum Requirements for Submittal			
<input checked="" type="checkbox"/> 1. Two (2) full sized copies and digital files of the Master Plan.			
<input checked="" type="checkbox"/> 2. Project Narrative and digital file describing reason for application and compliance with the criteria in Article 3 of the UDO.			
<input checked="" type="checkbox"/> 3. All information required on the attached Application Checklist.			
<input checked="" type="checkbox"/> 4. An Application Review Fee as determined by the Town of Bluffton Master Fee Schedule. Checks made payable to the Town of Bluffton.			
Note: A Pre-Application Meeting is required prior to Application submittal.			
Disclaimer: The Town of Bluffton assumes no legal or financial liability to the applicant or any third party whatsoever by approving the plans associated with this permit.			
I hereby acknowledge by my signature below that the foregoing application is complete and accurate and that I am the owner of the subject property. As applicable, I authorize the subject property to be posted and inspected.			
Property Owner Signature: 		Date: 5/30/18	
Applicant Signature: 		Date: 5/30/18	
For Office Use			
Application Number:		Date Received:	
Received By:		Date Approved:	



ATTACHMENT 1

TOWN OF BLUFFTON MASTER PLAN APPLICATION CHECKLIST

In accordance with the Town of Bluffton [Unified Development Ordinance \(UDO\)](#), the following information shall be included as part of a Master Plan application submitted for review. Depending on the proposal, the amount and type of documentation will vary. This checklist is intended to assist in the provision of the minimum documentation necessary to demonstrate compliance with the UDO. Upon review of the submitted application by Town Staff, additional information may be required. The use of this checklist by Town Staff or the Applicant shall not constitute a waiver of any requirement contained in the UDO. Applicants are encouraged to work closely with Town Staff in preparing any application prior to submittal.

NOTE: Depending on the activities proposed, Master Plan documentation will vary. At minimum, each plan must contain the General Information and Site & Existing Conditions Documentation in addition to information required for the other specific activities listed below, as applicable. Please contact Town Staff for questions and additional information.

General Information.

1. Name and address of property owner(s) and applicant. [See Master Plan Application](#)
2. If the applicant is not the property owner, a letter of agency from the property owner authorizing the applicant to act on behalf of the property owner. [Authorization Letter Attached](#)
3. Project name and/or name of development. [See Master Plan Application](#)
4. A detailed narrative describing the existing site conditions and uses, proposed development, proposed uses and activities that will be conducted on the site, statement of conformance with the UDO, description of any energy conservation or green technologies proposed on the site, the maintenance responsibility of any common or public areas, and publically dedicated improvements to be completed. [Project Narrative Attached](#)
5. A listing of any past development permit approval numbers associated with the site and existing conditions placed on the development property by the Town of Bluffton through past approvals including a detailed description of how the condition will be met. [For baseball field construction- Permit no. unknown](#)
6. An explanation of why any items on this checklist are not included with the application materials.
7. Project name and/or name of development. [See Master Plan Application](#)
8. All plans must include the following: name of county; municipality; project location; parcel identification number(s); date of original design; all dates of revisions; north arrow; graphic scale; and legend identifying all symbology. [Original Master Plan date: May 15, 2002; See New Campus Master Plan Exhibit B](#)
9. Vicinity map. [Included in Exhibit B](#)
10. Site data table to include; total acreage, pervious versus impervious cover, required and proposed open space calculations, number and area of proposed lots, residential density, number and area of each proposed structure, area of each use of the property and buildings, and required and proposed parking calculations. [See Exhibit B](#)
11. Phasing plan if the development is proposed to be developed in phases. [See Phasing Plan- Exhibit C](#)
12. Letters of approval, including any applicable permits, from the following agencies (as necessary for the project):
 - a) United States Army Corp of Engineers; [Updated, see DHEC letter, Exhibit I](#)
 - b) South Carolina Department of Health & Environmental Control; [See Updated DHEC letter, Exhibit I](#)
 - c) South Carolina Department of Transportation;
 - d) Beaufort County Engineering;
 - e) Beaufort County EMS;
 - f) Beaufort County School District;
 - g) Bluffton Township Fire District;
 - h) Beaufort Jasper Water Sewer Authority;
 - i) Town of Bluffton;
 - j) Electric Provider;
 - k) Natural Gas provider; and
 - l) Cable, telephone, and data provider. [Providers unchanged from original Master Plan Approval](#)

Site and Existing Conditions Documentation.

1. Comprehensive color photograph documentation of site and existing conditions. If digital, images should be at a minimum of 300 dpi resolution. [See Aerial, Exhibit D](#)



ATTACHMENT 1

TOWN OF BLUFFTON MASTER PLAN APPLICATION CHECKLIST

NOTE: Depending on the activities proposed, Master Plan documentation will vary. At minimum, each plan must contain the General Information and Site & Existing Conditions Documentation in addition to information required for the other specific activities listed below, as applicable. Please contact Town Staff for questions and additional information.

2. Names of the owners of contiguous parcels and an indication of adjacent existing and proposed (if known) land uses and zoning. **All adjacent land uses are PUD, See Exhibits A & B**
3. Location of municipal limits or county lines, zoning, overlay or special district boundaries, if they traverse the development property, form a part of the boundary of the development property, or are contiguous to such boundary. **N/A**
4. Location of all existing access points and intersections along both sides of any frontage or access roadway(s) within a minimum of 1,000 feet of the development property. **See Exhibit B**
5. Location, dimensions, name, and descriptions of all existing or recorded roadways, alleys, reservations, railroads, easements, or other public rights-of-way on or within 200 feet of the development property. **Exhibits F, G & H**
6. Location, size, and type of all existing easements, rights-of-way, or utility infrastructure on or within a minimum of 200 feet of the development property. **See Exhibits F, G & H**
7. Existing topography and land cover. Contours shall be shown in intervals of 1 foot or less. **See Exhibits A & D**
8. Location, dimensions, area, descriptions, and flow line of existing watercourses, drainage structures, ditches, one-hundred (100) year flood elevation, OCRM critical line, wetlands or riparian corridors top of bank locations, and protected lands on the development property. **See Exhibit H**
9. Location of any existing buildings, structures, parking lots, impervious areas, public and private infrastructure, or other man made objects located on the development property. **See Exhibit A**
10. Boundary survey with bearings and distances of all property lines, tract/lot acreage, location of property markers, and seal of a Registered Land Surveyor, as well as a legal description of the property. **See Exhibit A**
11. Location of benchmarks/primary control points or descriptions and ties to such control points to which all dimensions, angles, bearings, block numbers, and similar data shall be referred. **See Exhibit A**
12. Existing deed covenants, conditions, and restrictions, including any design or architectural standards. **Buckwalter**
13. Proposed deed covenants, conditions, and restrictions, including any design or architectural standards. **PUD**
14. Legal documents for proposed public dedications. **N/A**

Lot and Building Pattern.

1. Schematic block and roadway type layout and design indicating access, configuration, land use and intensity by block or portion thereof, and buffers including detailed dimensions as are necessary and appropriate to demonstrate compliance with all applicable standards and requirements. **See Exhibit B**

Transportation Networks.

1. A map or sketch showing the general relationship of the development to the surrounding areas with existing and proposed access roadways referenced to the intersection of the nearest primary or secondary paved roadway. **Exhibit E**
2. A Traffic Assessment. **See Exhibit E**
3. A Traffic Impact Analysis (TIA), if warranted by the Traffic Assessment. **See Exhibit E**
4. Proposed roadway alignment plan showing right-of-way widths with specific reference to the roadway type and design assembly. **See Exhibit B**
5. Proposed access indicating roadway names, connectivity, roadway extensions, proposed stub roads, and dead-end roadways including detailed dimensions as are necessary and appropriate to demonstrate compliance with all applicable standards and requirements. **See Exhibit B**
6. Existing and proposed non-motorized vehicle lanes, paths, sidewalks, and other facilities, including transit facilities, on and within 200 feet of the development property including detailed dimensions as are necessary and appropriate to demonstrate compliance with all applicable standards and requirements. **See Exhibit B**
7. Emergency access provisions. **See Exhibits F, G & H and Campus Master Plan (Exhibit B)**
8. Phasing plan of proposed traffic mitigation measures, or approved payments in-lieu of such that will be provided to the Town of Bluffton or applicable agency. Plan must ensure adequate transportation network is in place to support development at time of construction. **See Exhibit C**

Natural Resources, Tree Conservation, Planting, and Landscaping.

1. Location of existing tree canopy coverage including table summarizing canopy lot coverage area, lot area not covered by tree canopy, and tree canopy expressed as percentage of lot coverage. **See Exhibit D**



ATTACHMENT 1

TOWN OF BLUFFTON MASTER PLAN APPLICATION CHECKLIST

NOTE: Depending on the activities proposed, Master Plan documentation will vary. At minimum, each plan must contain the General Information and Site & Existing Conditions Documentation in addition to information required for the other specific activities listed below, as applicable. Please contact Town Staff for questions and additional information.

2. Location and table summarizing trees listed on America's Historic Tree Register as maintained by American Forests. **N/A**
3. Location of groups of trees that connect to other vegetated and/or treed areas on adjacent sites helping to create or extend a wildlife or natural corridor. **See Exhibits B & D**

Open Space Plan.

1. Proposed open space areas, habitat areas, types, and access trails both on and off-site. **See Exhibit B**
2. Proposed public lands and methods of dedication and access. **N/A**
3. Proposed ownership and method of transfer through deed restrictions, covenants, public dedication, or other method acceptable to the UDO Administrator. **N/A**
4. Proposed use for all portions of dedicated open space. **N/A**

Stormwater Management.

1. Description of proposed methods, and general layout of stormwater drainage, water system, sewer system and open space areas. **See Exhibits F, G, H & Campus Master & Open Space Plan (Exhibit B)**

SIGN AND RETURN THIS CHECKLIST WITH THE APPLICATION SUBMITTAL ALL SUBMITTALS MUST BE COLLATED AND FOLDED TO 8-1/2" X 11"

By signature below I certify that I have reviewed and provided the minimum submittal requirements listed above, including any additional items requested by the Town of Bluffton Staff. Any items not provided have been listed in the project narrative with an explanation as to why the required submittal item has not been provided or is not applicable. Further, I understand that failure to provide a complete, quality application or erroneous information may result in the delay of processing my application(s).

Donald "Dee Dee" Graham
Signature of Property Owner or Authorized Agent

5.30.18

Date

Dee Dee Graham

Printed Name

MASTER PLAN AMENDMENT FOR HILTON HEAD CHRISTIAN ACADEMY May 30, 2018

Project Narrative

The Hilton Head Christian Academy –Bluffton Campus is located on 27.78 acres within the Buckwalter PUD, in Bluffton, SC. Of the 27.78 acres, 24.21 acres are upland property and 3.57 acres are jurisdictional wetlands. The property is currently owned by the Hilton Head Christian Academy and is bordered on the west by a wetland; to the north by Bluffton Parkway; to the east by Masters Way and on the south by the Low Country Community Church. A minimum 20' buffer is maintained along the entire wetland. A 50' landscape easement is maintained on Bluffton Parkway, which contains utilities and an existing path. A 30' roadway buffer is located along Masters Way and a 20' adjacent use buffer is located along the adjacent church property.

The property is located within the Buckwalter PUD planning area. In 2002 a master plan was approved for the property, which was updated in April of 2004. This application is for a new PUD amendment reflecting an updated project master plan. Per Article 3 of the UDO, the proposed master plan is compliant and generally consistent with the program elements in previously approved plans, excepting the single academic building has been broken into multiple smaller, pedestrian scale buildings. Previously approved plans included a 2000 seat football stadium, 200 seat baseball stadium, practice field, a single academic building and supporting drives and parking. The proposed plan includes the same athletic elements, however, it has downsized stadium seating and moved to multiple academic buildings arranged in a campus-style. Parking has also been broken into smaller "pods" versus one consolidated lot as previously proposed.

Existing Conditions

The existing site contains a regulation baseball field and dirt parking lot accessed through an existing curb cut on Masters Way. The curb cut currently aligns with Pinecrest Way. A small detention basin supports the ballfield and the remaining property is covered with various stages of regenerative pine growth. A County aerial photo has been included for reference (Exhibit D).

Development Program & Phasing (Exhibit C)

The proposed master plan for the campus includes a school complex that will ultimately house a maximum of +/-800 elementary, middle, and high school students; a soccer/football stadium seating 750 (600 home seats, 150 visitor seats); a baseball stadium; a practice/P.E. field; and parking. The buildings will be broken into (5) pieces to be completed as the student population grows. The project will be completed in phases as outlined in the attached Phasing Plan (Exhibit C).

It is anticipated that initial enrollment will be up to 500 students housed in two academic buildings: administration/lower school (22,312 S.F.); & middle/upper school (23,190 S.F.) with a Gymnasium/PAC (30,026 S.F.), totaling 75,528 SF. The remaining school

buildings (supporting future enrollment of 800 anticipated students) will be completed in subsequent phases and are anticipated to add approximately 80,000 square feet. It is anticipated that Phase 1 construction will begin in later this year (2018). Classes are anticipated to begin in August of 2020. These are estimated schedules, are impacted by market conditions and are subject to change.

Wetlands

There are 3.57 acres of jurisdictional wetlands located on-site. The proposed project will impact 1.03 acres of these wetlands. The USACE verified the jurisdictional wetlands in a letter dated April 6, 2018. The applicant submitted a wetland impact permit to the USACE in December 2017 and expects to receive the permit between July and September 2018. A condition of the permit requires the applicant to purchase 10.3 wetland mitigation Credits from an approved mitigation bank. The applicant is also required to preserve 2.37 acres of the remaining on-site wetlands through a restrictive covenant. (See Exhibit I).

Utilities

Beaufort Jasper Water and Sewer will own, operate and maintain the water and sewer system for this project. Power will be provided by Palmetto Electric Cooperative. Hargray Communications will provide telephone and cable. Hilton Head Christian Academy will own and maintain the property including on-site drives as per Town requirements.

Stormwater Management

Stormwater runoff generated from impervious areas will be collected by swales, inlets, or flow via overland flow into multiple bio-retention areas before discharging into wet detention ponds. The combined SWM facilities will have the capacity to control peak runoff rate and treat water quality. The wet detention pond will serve as a sediment basin during construction. In addition to the sediment basin, silt fencing (double row along wetlands), inlet protection, a construction entrance, and temporary/permanent seeding will be used to control erosion on the site.

The site will be designed to meet the Town of Bluffton Stormwater requirements which exceed SCDHEC water quantity and quality regulations. The Stormwater requirements require the retention of the 95th percentile storm volume, the OCRM first flush volume, reducing the post-development runoff rate to pre-development runoff rate up through the 25-year storm, and pollutant removal for phosphorus, fecal coliform, and nitrogen. The above requirements will be met through the use of the multiple SWM facilities located on site.

Open Space & Pedestrian Connectivity

Of the 27.78 acre site, approximately 24.6% is proposed to have impervious surfacing; 74.2% is proposed as open space; and 1.2% is utility easement. The open space includes retained wetland and wetland buffers; adjacent use and adjacent street buffers; landscape buffers; detention ponds; recreation facilities and undeveloped green space.

A series of walks, paths and trails will link the school campus to existing perimeter trails which will be retained.

Parking

In April (17), 2000 the Beaufort County Zoning & Development Standards Ordinance 90/3 was modified addressing parking. The modified section (5.2.1.1 Minimum off-street Parking) does not address schools typically classified as either Institutional or Educational facilities. For the purposes of calculating parking, this submittal utilizes the Town of Bluffton's current UDO requirements for calculation of off-street parking (Table 5.11.3.C). The application is based on land use calculation methods which can be applied to either Institutional land uses or to Educational land uses as follows:

Based on UDO requirements for Civic/Institutional land uses: This requires 1 space for every 1,000 SF. Given that all buildings will be institutional, the 1/1,000 SF standard would be applied to all buildings yielding the following requirement:

Phase One building square footage:	75,528 SF
Future Phases building square footage:	80,000 SF
Total building SF at build-out (all phases):	155,528 SF divided by 1,000= 156 spaces

Based on UDO requirements for Educational land uses: This requires 1 space for every 3 students and 1 space for each instructor (faculty). At build-out, the school anticipates 73 students per grade and a total of 60 faculty. Focusing on the population that could drive (high school students) the following calculation is applied:

High School Students at build-out: (freshman, sophomore, junior, senior):
 $73 \times 4 = 292$ students

Utilizing 1 space / 3 students:	292 divided by 3=	98 spaces
Faculty (at build-out): 60	1 space per person=	60 spaces
Admin/Support (at build-out): 25	1 space per person=	25 spaces
Visitor/Guest Parking:	Proposed=	25 spaces
Total parking		208 spaces

The proposed master plan (Exhibit B) contains 208 parking spaces dispersed in (3) lots.

Transportation Networks

In May, 2018 Bihl Engineering completed a Traffic Impact Analysis for the project. The Campus Master Plan & Open Space Plan (Exhibit B) reflects on-site recommendations contained in the Analysis. (See Exhibit E, Traffic Impact Analysis, Hilton Head Christian Academy, May 2018).

End of Memorandum



May 29, 2018

Heather L. Colin, AICP
Director of Growth Management
Town of Bluffton
20 Bridge Street
Bluffton, SC 29910

RE: Hilton Head Christian Academy, Bluffton Campus Applicant Authorization

Dear Sirs:

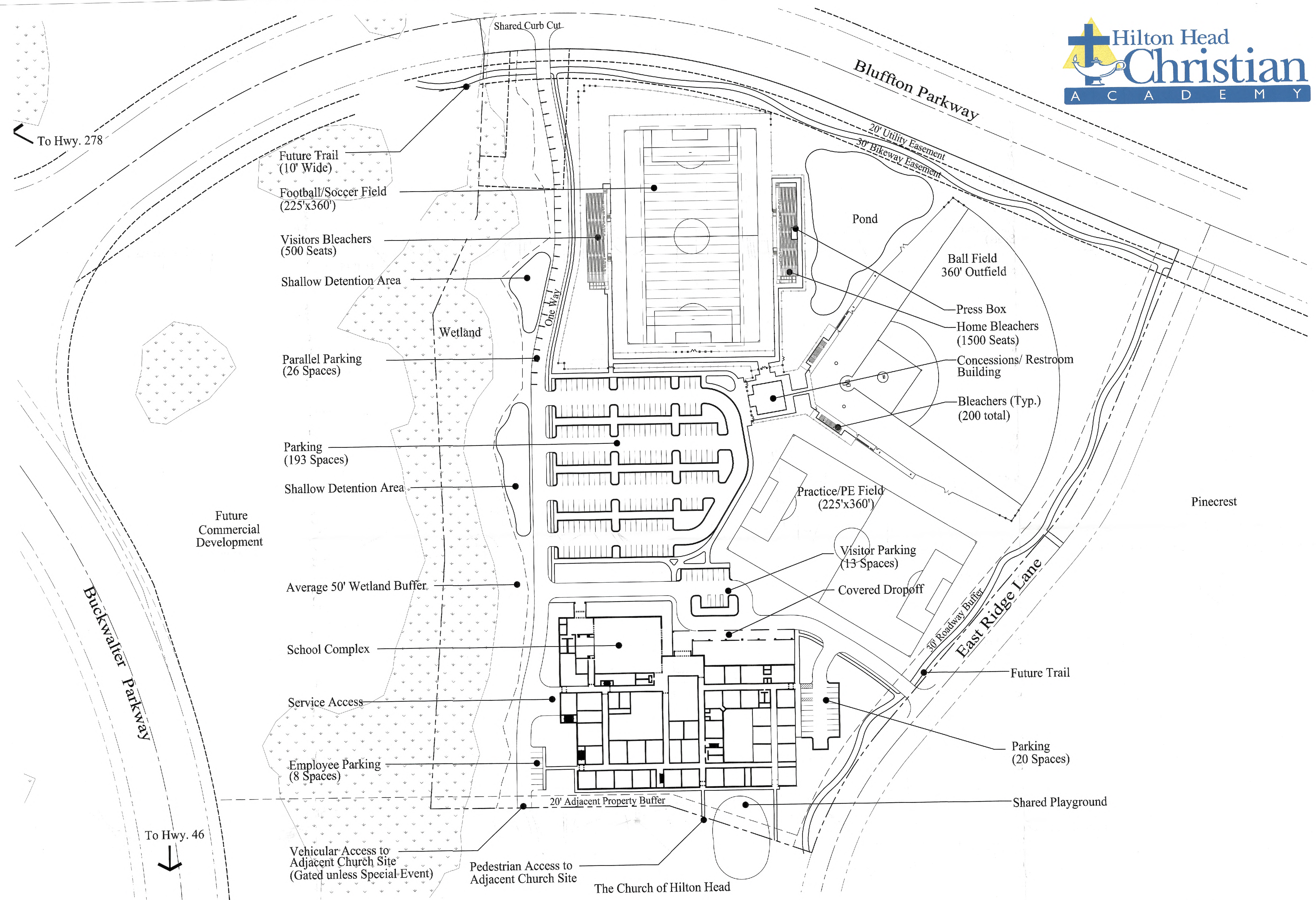
Donald Graham (d.b.a. CISCO) is authorized to represent Hilton Head Christian Academy as its agent for the development and construction for the Bluffton Campus.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

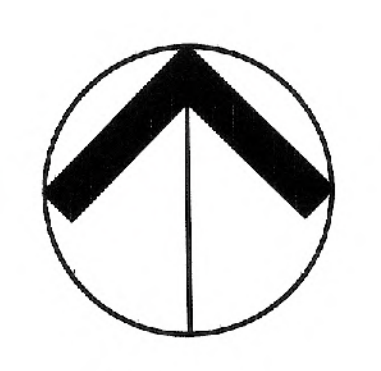
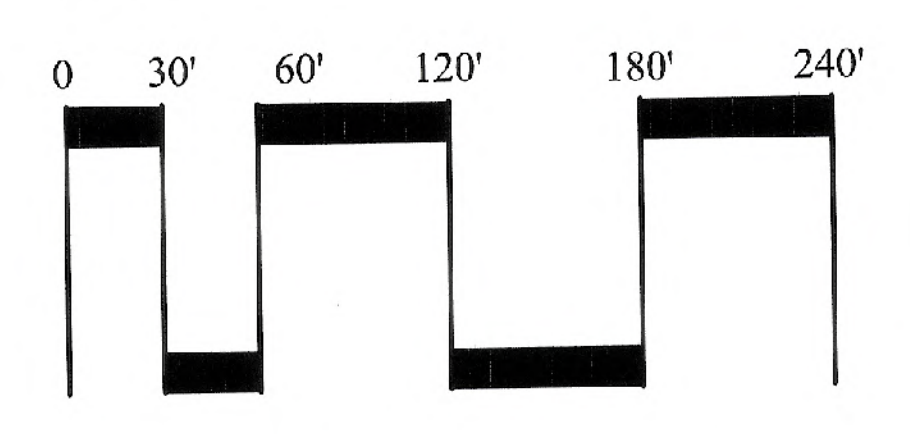
A handwritten signature in black ink, appearing to read "Doug Langhals".

Doug Langhals
Head of School
Hilton Head Christian Academy
55 Gardner Drive
Hilton Head Island, SC 29926



Wood+Partners Inc. WPI
Landscape Architects
Land Planners

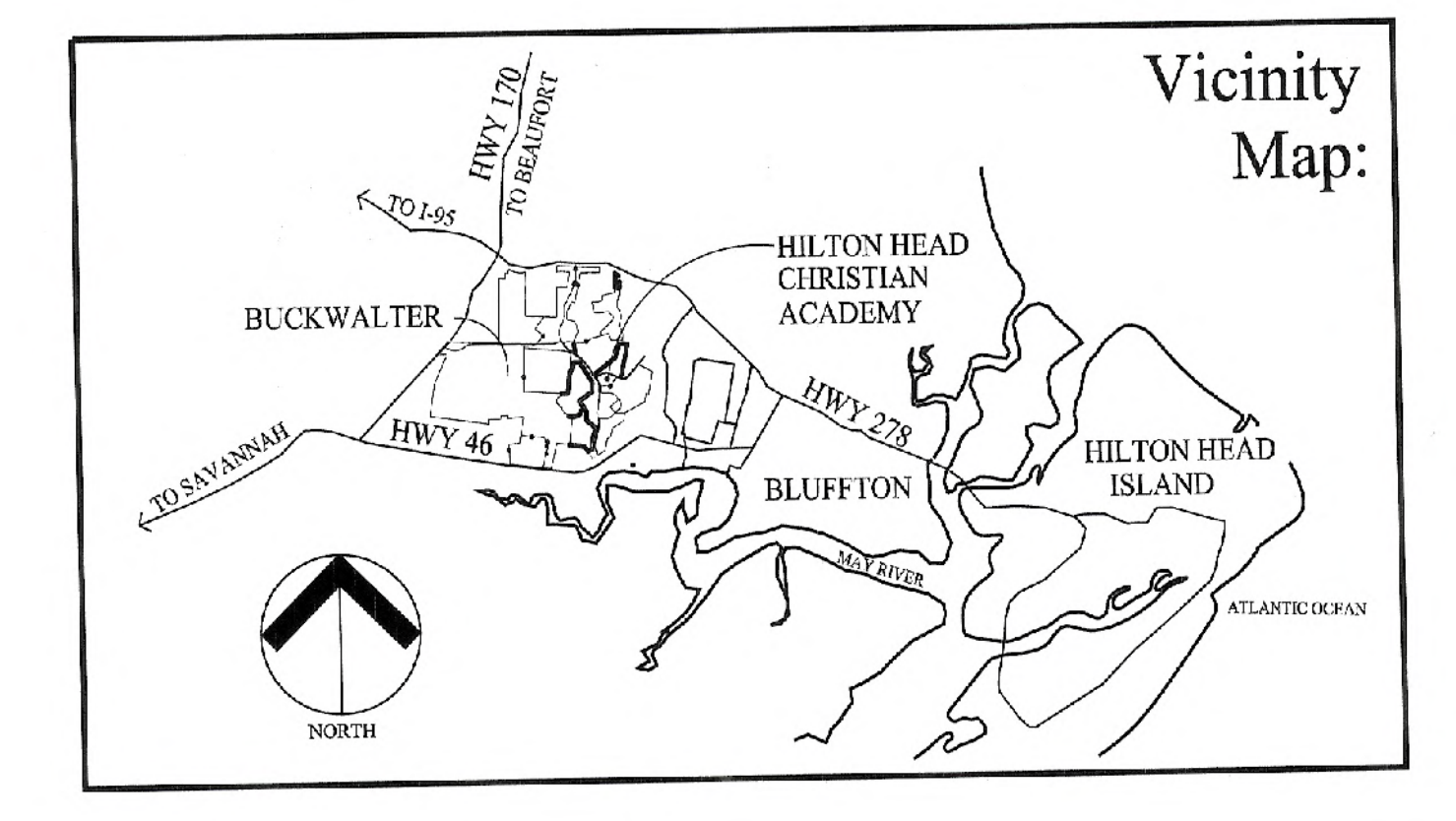
P.O. Box 23849 - Hilton Head Island, SC 29925
843.661.6618 Fax 843.661.7086



Conceptual Master Plan Subject to Change

MASTER PLAN FOR **THE HILTON HEAD CHRISTIAN ACADEMY BLUFFTON CAMPUS**

Prepared for Buckwalter Group, LLC.
Bluffton, South Carolina
May 15, 2002





CAMPUS MASTER PLAN &
OPEN SPACE PLAN
EXHIBIT B

SITE DATA:	
COUNTY:	BEAUFORT
MUNICIPALITY:	BLUFFTON
PARCEL ID NUMBER:	R6100030-000-0442-0000
ACREAGE:	27.78 ACRES
LOCATION:	BLUFFTON PKWY & MASTERS WAY
ZONING:	PUD (BUCKWALTER)
ORIGINAL MASTER PLAN DATED	MAY 15, 2002

SITE DEVELOPMENT SUMMARY:	
ACREAGE:	27.78 ACRES
PROPOSED IMPERVIOUS AREA:	± 6.83 ACRES (± 24.6%)
PROPOSED OPEN SPACE:	± 20.62 ACRES (± 74.2%)
UTILITY EASEMENT:	± 0.33 ACRES (± 1.2%)
BUILDING SUMMARY:	
LOWER SCHOOL / ADMIN:	22,312 SF
MIDDLE SCHOOL:	23,190 SF
GYMNASIUM / PAC:	30,026 SF
HEART / PAC:	55,000 SF
MIDDLE (FUTURE):	25,000 SF

PARKING SUMMARY:	
PARKING CALCULATED BASED ON TOWN OF BLUFFTON'S UDO REQUIREMENTS FOR EDUCATIONAL FACILITIES (1 SPACE PER 3 STUDENTS & 1 SPACE PER INSTRUCTOR).	
PARKING REQUIREMENTS: HHCA ANTICIPATES 73 STUDENTS / GRADE AT BUILD OUT: 73 x 4 (FRESHMAN, SOPHOMORE, JR, SR)=292 / 3 = 98 SPACES	
HHCA ANTICIPATES 60 INSTRUCTORS AT BUILD OUT: 1 SPACE / 1 INSTRUCTOR = 60 SPACES	
HHCA ANTICIPATES 25 ADMIN / SUPPORT STAFF AT BUILD OUT: 1 SPACE / 1 ADMIN / SUPPORT STAFF = 25 SPACES	
VISITOR / GUEST PARKING = 25 SPACES	
TOTAL PARKING:	208 SPACES
PARKING PROVIDED PER LOT:	
LOT A:	67 SPACES
LOT B:	82 SPACES
LOT C:	59 SPACES
TOTAL:	208 SPACES

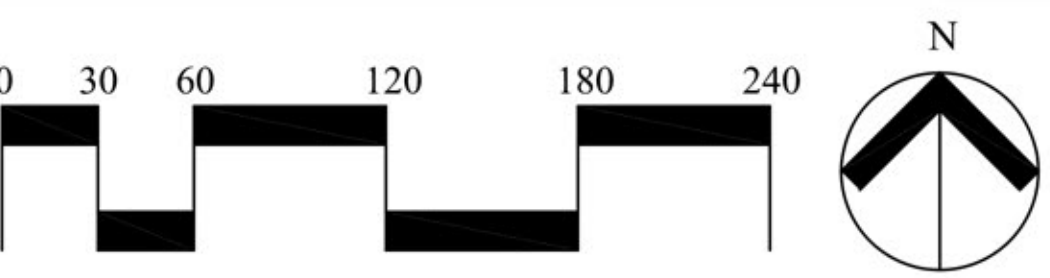
LEGEND	
	CAMPUS BUILDING
	FUTURE CAMPUS BUILDING
	LEARNING NODE
	COVERED DROP-OFF
	MIDDLE SCHOOL DROP-OFF ROUTE
	LOWER SCHOOL DROP-OFF ROUTE
	BUS DROP-OFF ROUTE
	PEDESTRIAN NETWORK
	PEDESTRIAN SPINE/FIRE ACCESS (16' MIN.)

Project No: 01-18017

Date: 05-30-2018

Scale: 1" = 60'-00"

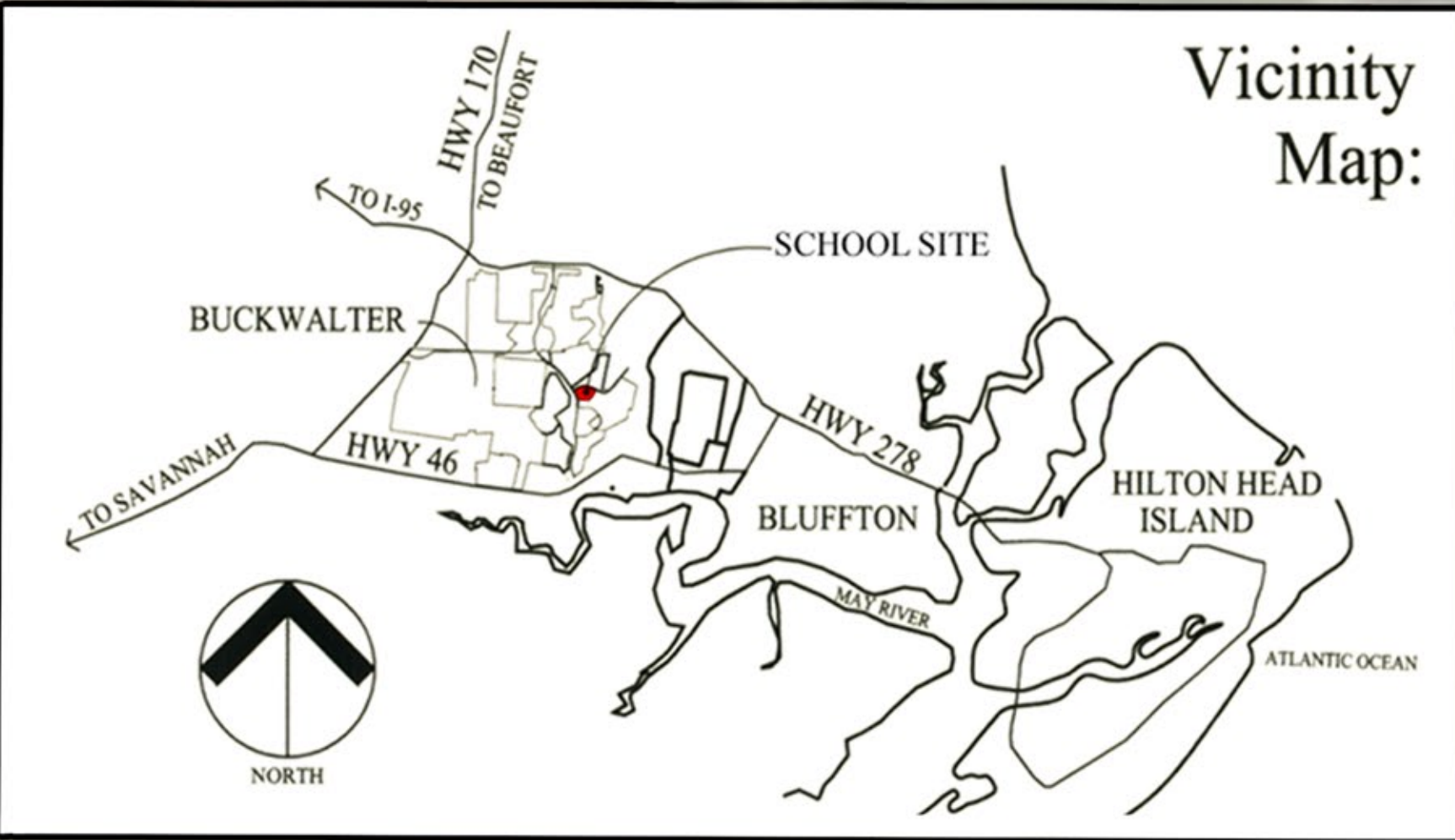
Page Title: Campus Master Plan & Open Space Plan



Scale: 1" = 60' 00"

Document is preliminary and subject to change.

2013 Wood+Partners Inc., 7 Lafayette Place, Hilton Head Island, SC 29926 Tel. 843-681-6618 Fax 843-681-7086, www.woodandpartners.com



Hilton Head Christian Academy
Bluffton, South Carolina

Wood+Partners Inc. **WPI**
Landscape Architects
Land Planners

PO Box 23949 ■ Hilton Head Island, SC 29925
843.681.6618 ■ Fax 843.681.7086 ■ www.woodandpartners.com

PHASING PLAN EXHIBIT C



PHASE 8

PHASE 7

PHASE 6

PHASE 4

PHASE 3

PHASE 2

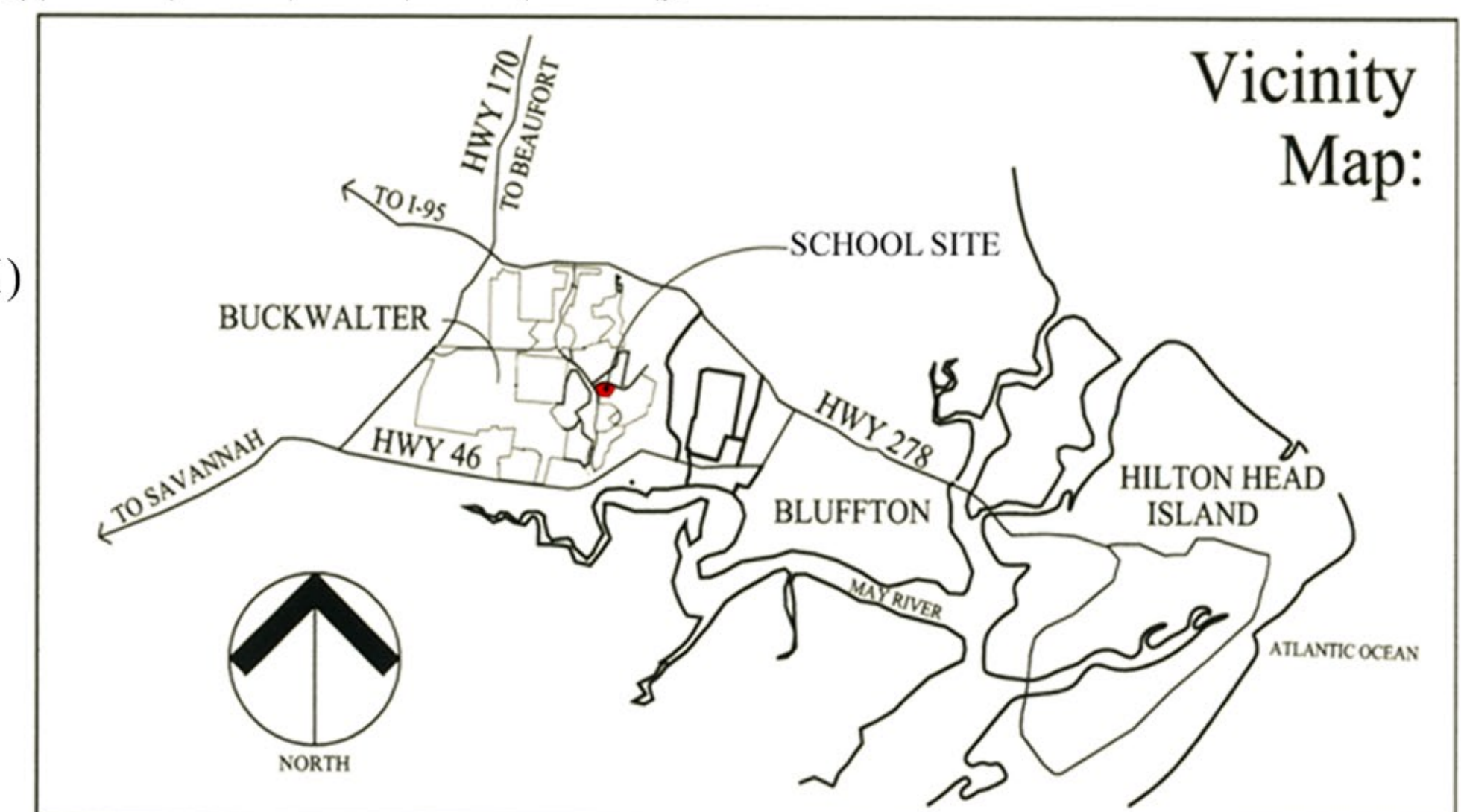
PHASE 1

PHASE 5

PHASE 2
(COMPLETE STADIUM)

SITE DATA:

COUNTY: BEAUFORT
MUNICIPALITY: BLUFFTON
PARCEL ID NUMBER: R6100030-000-0442-0000
ACREAGE: 27.78 ACRES
LOCATION: BLUFFTON PKWY & MASTERS WAY
ZONING: PUD (BUCKWALTER)
ORIGINAL MASTER PLAN DATED MAY 15, 2002

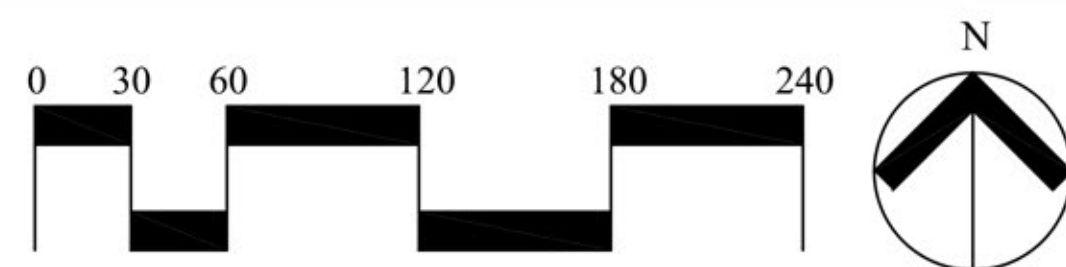


Project No: 01-18017

Date: 05-30-2018

Scale: 1" = 60'-00"

Page Title: Phasing Plan



Scale: 1" = 60' 00"

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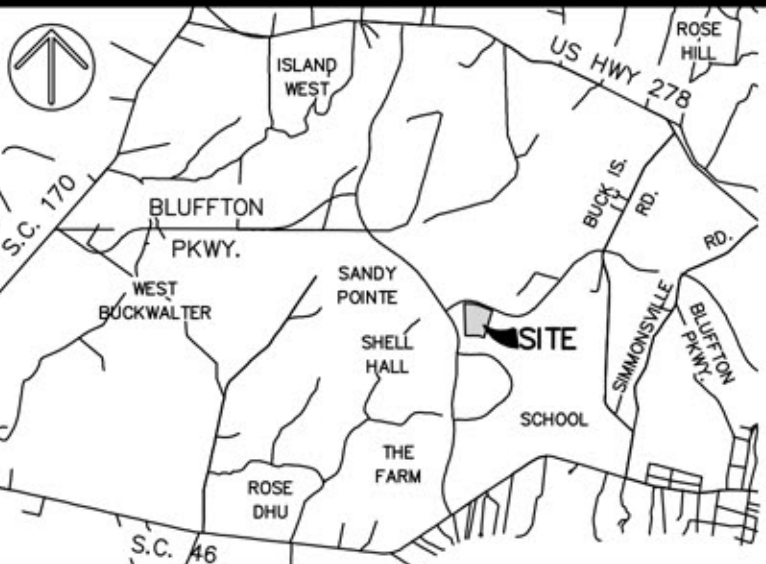
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EXISTING CONDITIONS
EXHIBIT A-1

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	CHORD BEARING	CHORD	DELTA
C1	44.25	1140.00	22.13	S84°57'34"W	44.25	2°13'27"
C2	100.40	1140.00	50.23	S88°35'40"W	100.37	5°02'45"
C3	445.41	1140.00	225.58	N77°41'23"W	442.58	22°23'10"
C4	176.07	567.00	88.75	N32°23'57"E	175.36	17°47'30"
C5	243.45	633.00	123.25	S30°16'37"W	241.95	22°02'09"



VICINITY MAP NOT TO SCALE

- NOTES:
- THIS LOT APPEARS TO LIE IN ZONE C, NOT A SPECIAL FLOOD HAZARD AREA, PER FIRM PANEL No. 85-D, COMMUNITY No. 450025, DATED 9/28/86.
 - CONTOURS ARE IN ONE FOOT INTERVALS. TREES SIZES SHOWN ARE IN INCHES OF DIAMETER. PLANTED PINE TREES WERE NOT LOCATED FOR THIS SURVEY.
 - THIS MAP DOES NOT CONSTITUTE A BOUNDARY SURVEY AND IS NOT FOR THE TRANSFER OF PROPERTY OR RECORDING.
 - ELEVATIONS ARE BASED ON NGVD 29 DATUM.

- REFERENCE(S):
- PLAT BOOK 91, PAGE 2
 - PLAT BOOK 111, PAGE 46
 - DEED BOOK 2301, PAGE 861

- LEGEND:
- | | |
|-------|------------------------------|
| CMF | CONCRETE MONUMENT FOUND |
| IPF | IRON PIPE FOUND |
| RBF | REBAR FOUND |
| TRNF | TRANSFORMER |
| TEL | TELEPHONE PEDESTAL |
| SSMH | SANITARY SEWER MANHOLE |
| -S- | SANITARY SEWER LINE - 8" PVC |
| SSCO | SANITARY SEWER CLEANOUT |
| WV | WATER VALVE |
| FH | FIRE HYDRANT |
| GI | GRATE INLET |
| G | GUM |
| LO | LIVE OAK |
| BG | BLACK GUM |
| MA | MAPLE |
| -X- | FENCE |
| x10.0 | SPOT ELEVATION |
| -10- | CONTOUR |

DONALD R. COOK, JR.
S.C.P.L.S. No. 19010
NOT VALID UNLESS CRAMPED WITH SEAL

30 15 0 30 60
GRAPHIC SCALE

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A TREE & TOPOGRAPHIC SURVEY OF
27.8 Ac.
**BLUFFTON PARKWAY
& MASTERS WAY**

TMS R610 030 000 0442 0000
TOWN OF BLUFFTON, BEAUFORT COUNTY,
SOUTH CAROLINA

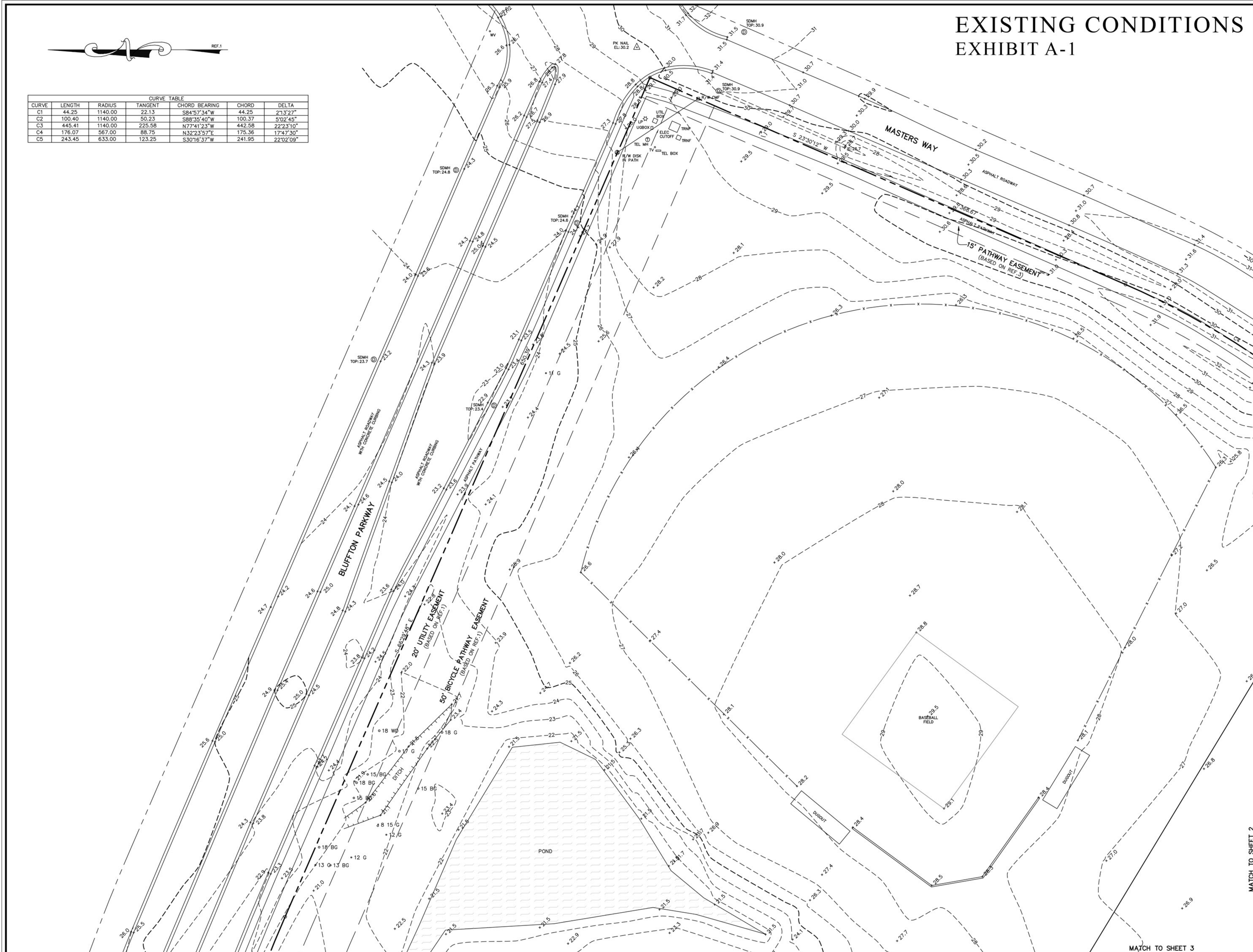
PREPARED FOR:
**HILTON HEAD
CHRISTIAN ACADEMY**



PROJECT No.: 17060001

DRAWN BY: DRC PROJECT NAME: 17060001
DATE: 09.22.17 FILE: 17060001T 092217.dwg
SCALE: 1"= 30'

SHEET 1 OF 4

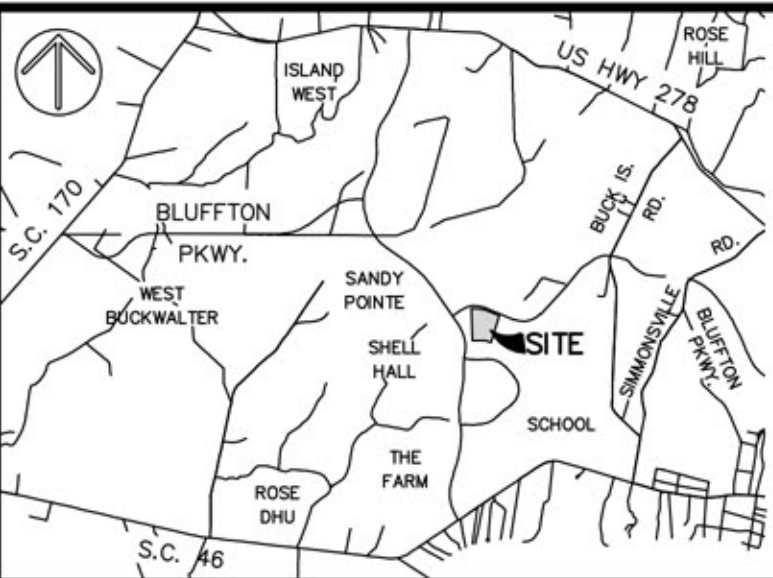


MATCH TO SHEET 2

MATCH TO SHEET 3

EXISTING CONDITIONS

EXHIBIT A-2



VICINITY MAP NOT TO SCALE

- NOTES:
1. THIS LOT APPEARS TO LIE IN ZONE C, NOT A SPECIAL FLOOD HAZARD AREA, PER FIRM PANEL No. 85-D, COMMUNITY No. 450025, DATED 9/28/86.
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 4. ELEVATIONS ARE BASED ON NGVD 29 DATUM.

- REFERENCE(S):
1. PLAT BOOK 91, PAGE 2
 2. PLAT BOOK 111, PAGE 46
 3. DEED BOOK 2301, PAGE 861

LEGEND:

CMF	CONCRETE MONUMENT FOUND
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SSCO	SANITARY SEWER CLEANOUT
WV	WATER VALVE
FH	FIRE HYDRANT
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G	GUM
LO	LIVE OAK
BG	BLACK GUM
MA	MAPLE
-X-	FENCE
x10.0	SPOT ELEVATION
-10-	CONTOUR

DONALD R. COOK, JR.
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27.8 Ac.
BLUFFTON PARKWAY
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TMS R610 030 000 0442 0000
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SOUTH CAROLINA

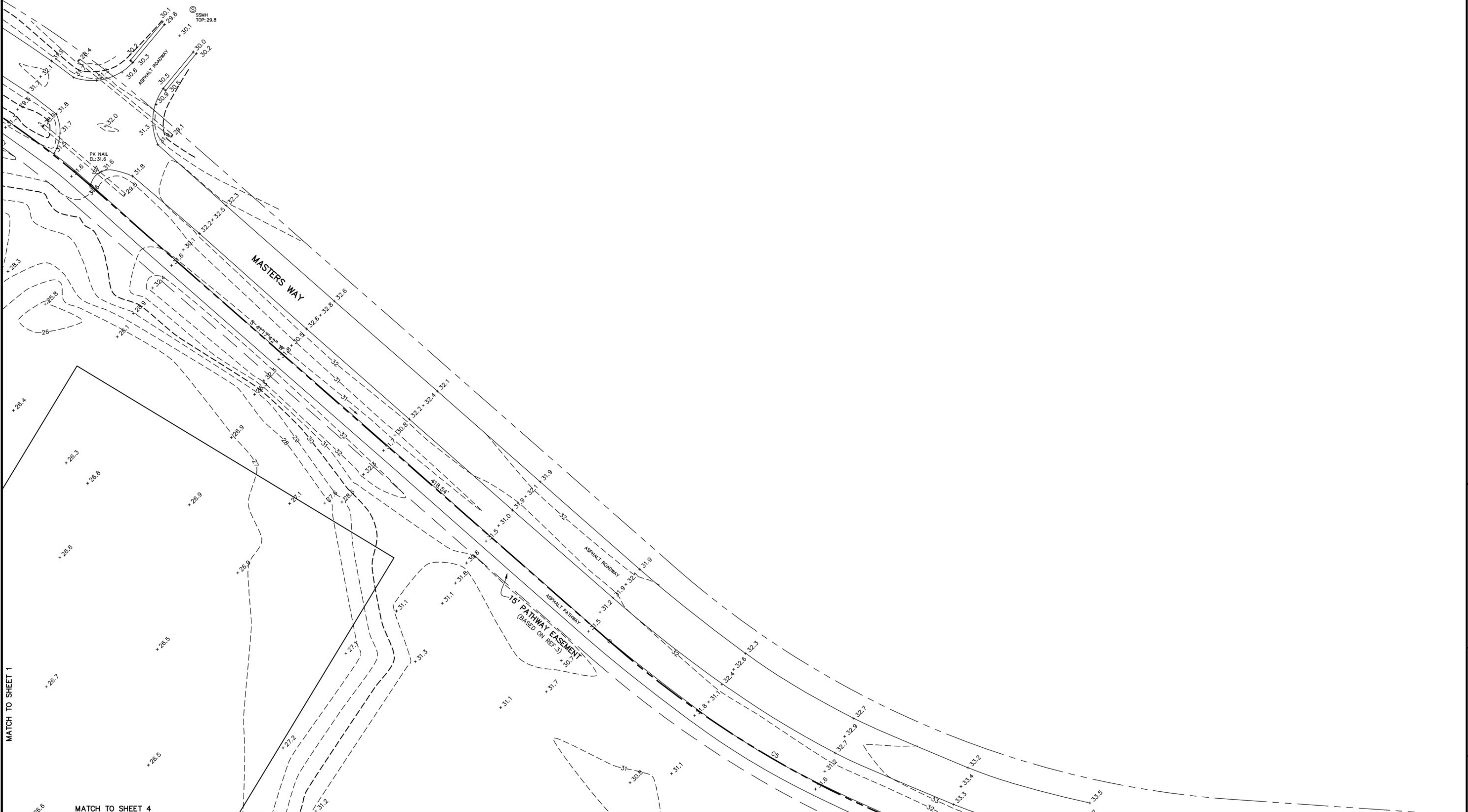
PREPARED FOR:
HILTON HEAD
CHRISTIAN ACADEMY

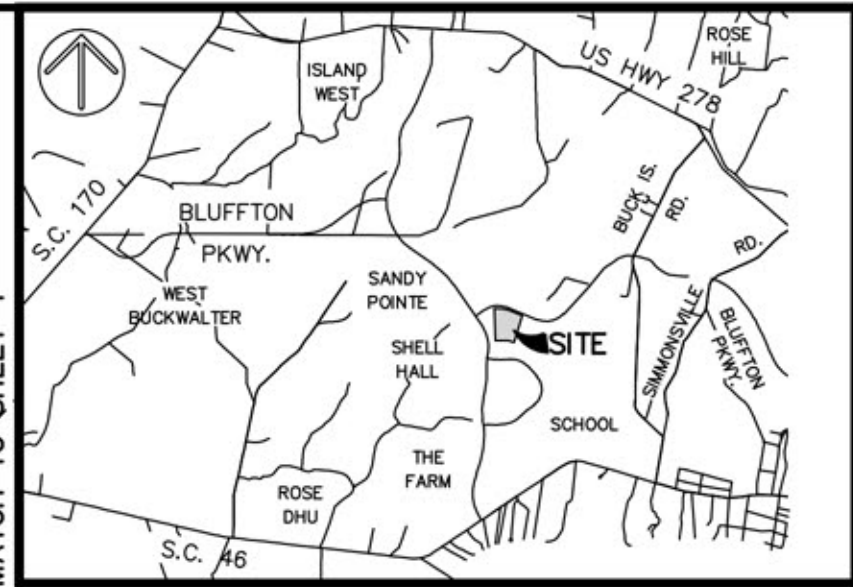
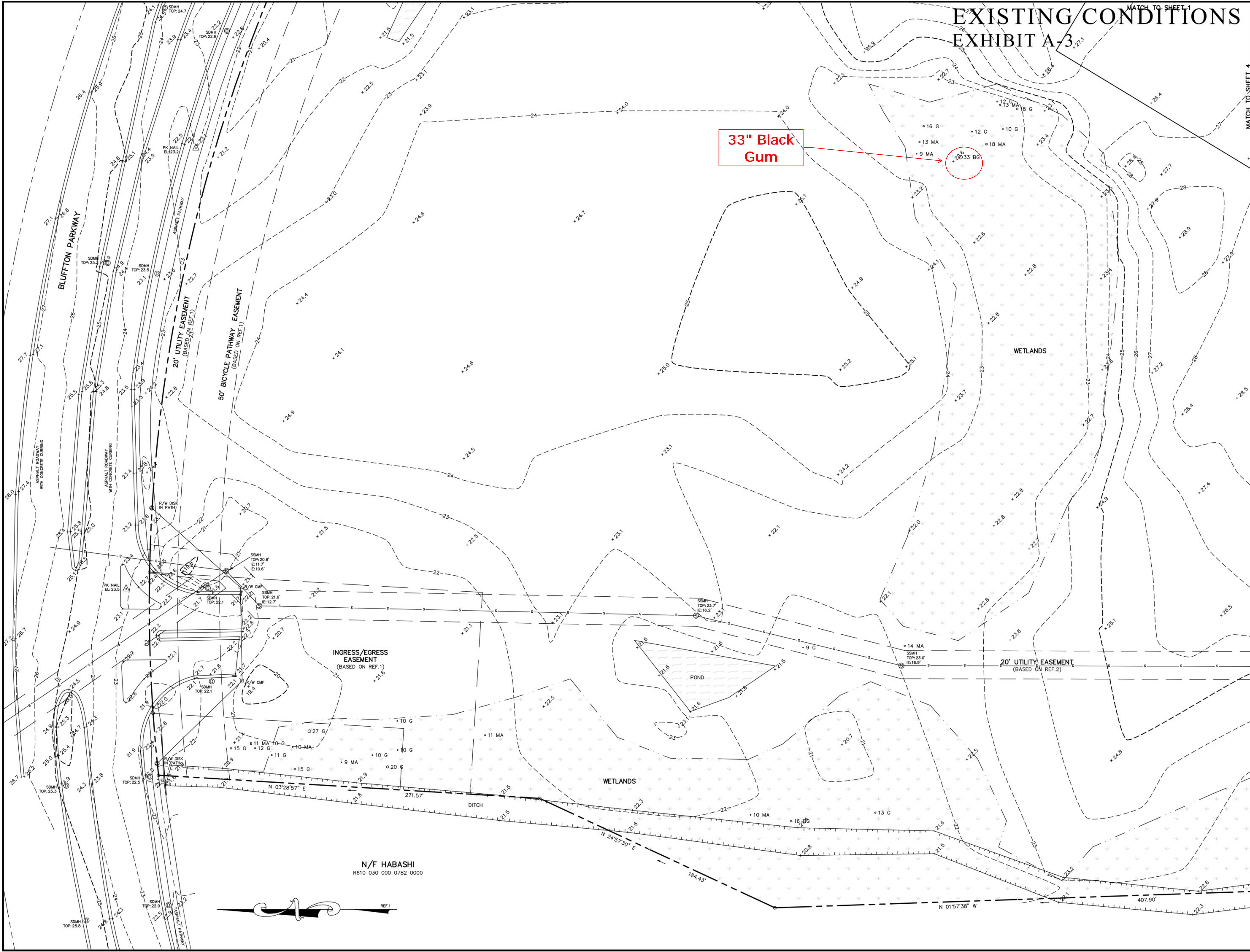


PROJECT No.: **17060001**

DRAWN BY:	DRC	PROJECT NAME	17060001
DATE:	09.22.17	FILE:	17060001T 092217.dwg
SCALE:	1" = 30'		

SHEET **2** OF **4**





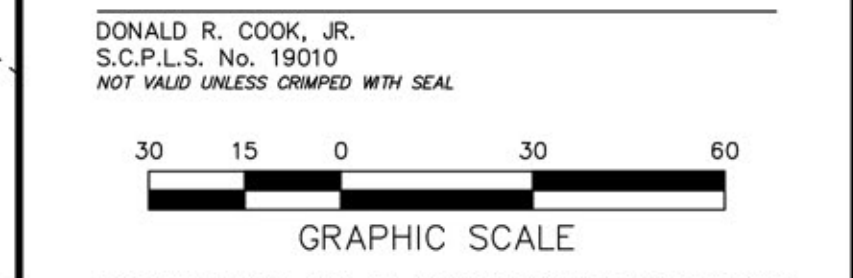
VICINITY MAP NOT TO SCALE

- NOTES:
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LEGEND:

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-X-	FENCE
x10.0	SPOT ELEVATION
-10-	CONTOUR



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27.8 Ac.
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& MASTERS WAY**

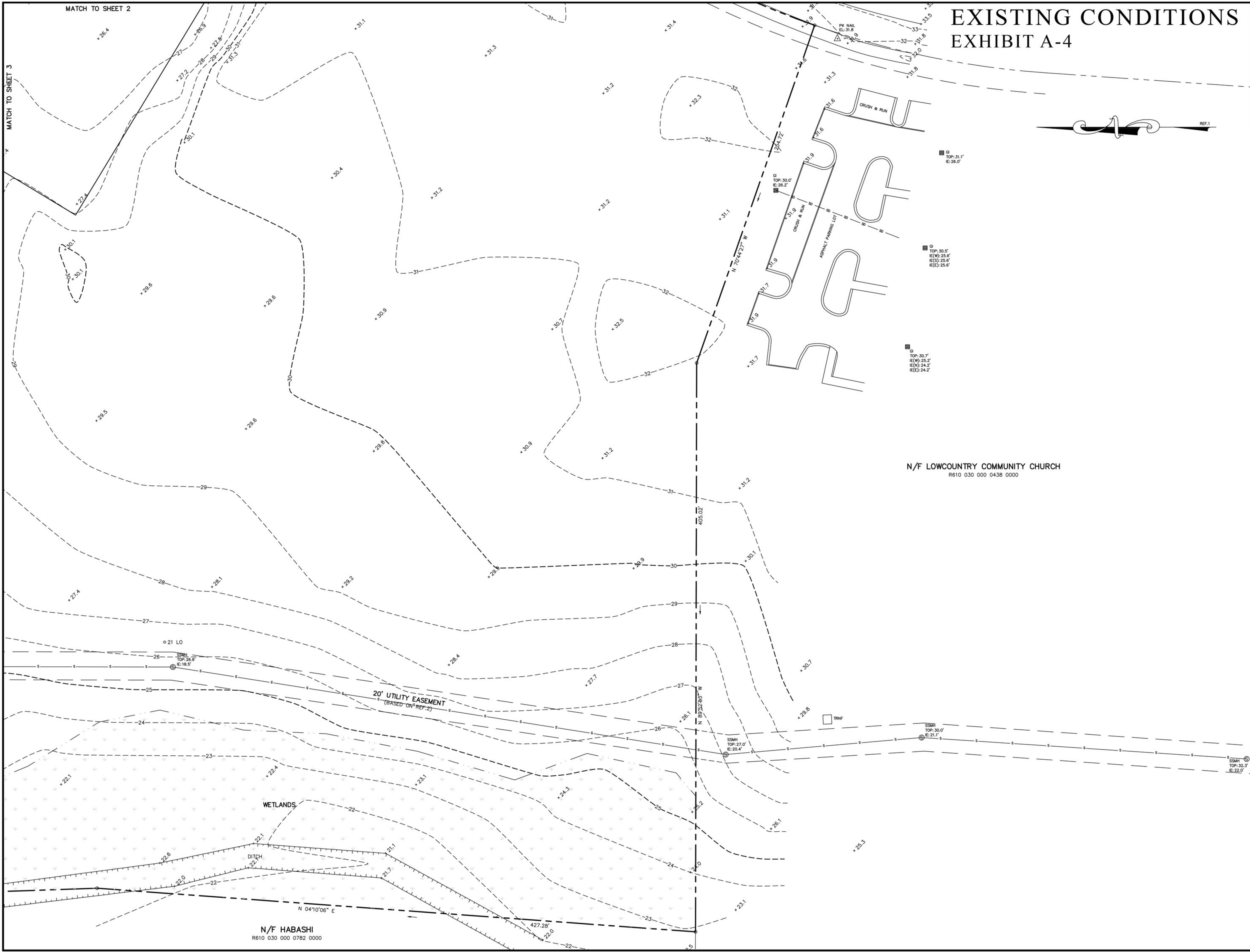
TMS R610 030 000 0442 0000
TOWN OF BLUFFTON, BEAUFORT COUNTY,
SOUTH CAROLINA

PREPARED FOR:
**HILTON HEAD
CHRISTIAN ACADEMY**

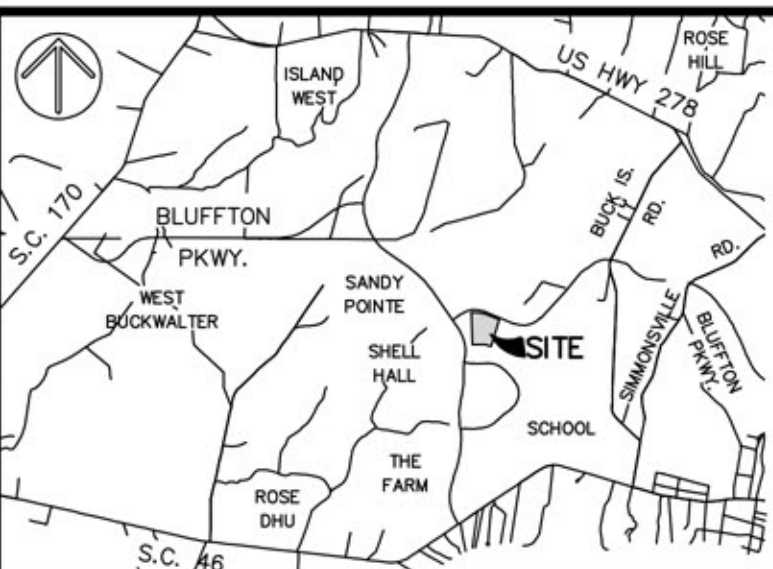


PROJECT No.: **17060001**
DRAWN BY: DRC PROJECT NAME: 17060001
DATE: 09.22.17 FILE: 17060001T 092217.dwg
SCALE: 1" = 30'

SHEET **3** OF **4**



EXISTING CONDITIONS
EXHIBIT A-4



VICINITY MAP NOT TO SCALE

- NOTES:
1. THIS LOT APPEARS TO LIE IN ZONE C, NOT A SPECIAL FLOOD HAZARD AREA, PER FIRM PANEL No. 85-D, COMMUNITY No. 450025, DATED 9/28/86.
 2. CONTOURS ARE IN ONE FOOT INTERVALS. TREES SIZES SHOWN ARE IN INCHES OF DIAMETER. PLANTED PINE TREES WERE NOT LOCATED FOR THIS SURVEY.
 3. THIS MAP DOES NOT CONSTITUTE A BOUNDARY SURVEY AND IS NOT FOR THE TRANSFER OF PROPERTY OR RECORDING.
 4. ELEVATIONS ARE BASED ON NGVD 29 DATUM.

- REFERENCE(S):
1. PLAT BOOK 91, PAGE 2
 2. PLAT BOOK 111, PAGE 46
 3. DEED BOOK 2301, PAGE 861

LEGEND:

CMF	CONCRETE MONUMENT FOUND
IPF	IRON PIPE FOUND
RBF	REBAR FOUND
TRNF	TRANSFORMER
TEL	TELEPHONE PEDESTAL
SSMH	SANITARY SEWER MANHOLE
-S-	SANITARY SEWER LINE - 8" PVC
SSCO	SANITARY SEWER CLEANOUT
WV	WATER VALVE
FH	FIRE HYDRANT
GI	GRATE INLET
G	GUM
LO	LIVE OAK
BG	BLACK GUM
MA	MAPLE
-X-	FENCE
x10.0	SPOT ELEVATION
-10-	CONTOUR

DONALD R. COOK, JR.
S.C.P.L.S. No. 19010
NOT VALID UNLESS CRIMPED WITH SEAL

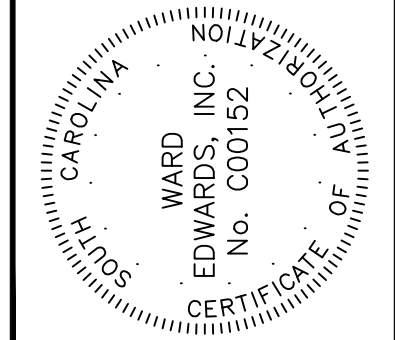
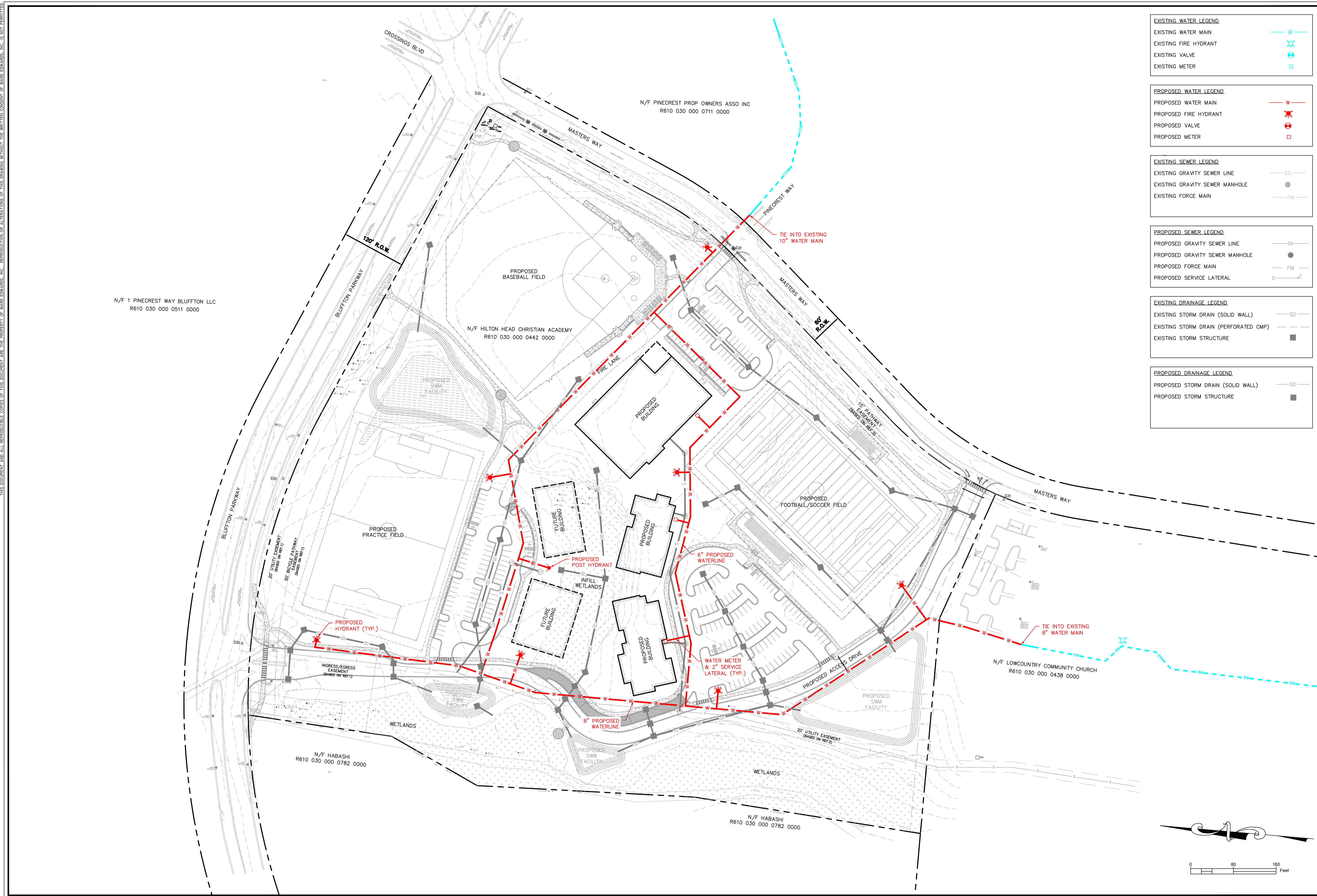


GRAPHIC SCALE
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A TREE & TOPOGRAPHIC SURVEY OF
27.8 Ac.
**BLUFFTON PARKWAY
& MASTERS WAY**
TMS R610 030 000 0442 0000
TOWN OF BLUFFTON, BEAUFORT COUNTY,
SOUTH CAROLINA
PREPARED FOR:
**HILTON HEAD
CHRISTIAN ACADEMY**



PROJECT No.: **17060001**
DRAWN BY: DRC PROJECT NAME: 17060001
DATE: 09.22.17 FILE: 17060001T 092217.dwg
SCALE: 1" = 30'
SHEET **4** OF **4**



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**Ward
Edwards**
ENGINEERING

P.O. BOX 381 • BLUFFTON, SOUTH CAROLINA 29910
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WWW.WARDEDWARDS.COM

HILTON HEAD CHRISTIAN ACADEMY
BLUFFTON, SOUTH CAROLINA

PROPOSED WATER DISTRIBUTION SYSTEM

VERTICAL DATUM:

- ☒ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION

PROJECT #:	HHC003
DATE:	05/30/18
DESIGNED BY:	CPB
CHECKED BY:	ELH
SCALE:	1"=60'

SHEET
EXHIBIT F

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R610 030 000 0511 0000

N/F PINECREST PROP OWNERS ASSO INC
R610 030 000 0711 0000

N/F HILTON HEAD CHRISTIAN ACADEMY
R610 030 000 0442 0000

N/F LOWCOUNTRY COMMUNITY CHURCH
R610 030 000 0438 0000

N/F HABASHI
R610 030 000 0782 0000

N/F HABASHI
R610 030 000 0782 0000

EXISTING WATER LEGEND

- EXISTING WATER MAIN
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING METER

PROPOSED WATER LEGEND

- PROPOSED WATER MAIN
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE
- PROPOSED METER

EXISTING SEWER LEGEND

- EXISTING GRAVITY SEWER LINE
- EXISTING GRAVITY SEWER MANHOLE
- EXISTING FORCE MAIN

PROPOSED SEWER LEGEND

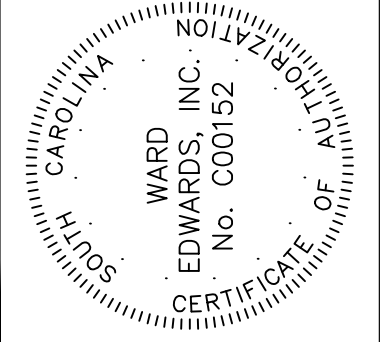
- PROPOSED GRAVITY SEWER LINE
- PROPOSED GRAVITY SEWER MANHOLE
- PROPOSED FORCE MAIN
- PROPOSED SERVICE LATERAL

EXISTING DRAINAGE LEGEND

- EXISTING STORM DRAIN (SOLID WALL)
- EXISTING STORM DRAIN (PERFORATED CMP)
- EXISTING STORM STRUCTURE

PROPOSED DRAINAGE LEGEND

- PROPOSED STORM DRAIN (SOLID WALL)
- PROPOSED STORM STRUCTURE



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BLUFFTON, SOUTH CAROLINA

HILTON HEAD CHRISTIAN ACADEMY
HILTON HEAD ISLAND, SC

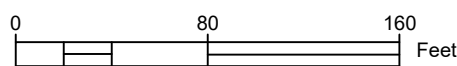
PROPOSED SANITARY SEWER SYSTEM

VERTICAL DATUM:

☒ NOT FOR CONSTRUCTION
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PROJECT #: HHC003
DATE: 05/30/18
DESIGNED BY: CPB
CHECKED BY: ELH
SCALE: 1"=60'

SHEET
EXHIBIT G



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R610 030 000 0442 0000

N/F LOWCOUNTRY COMMUNITY CHURCH
R610 030 000 0438 0000

N/F HABASHI
R610 030 000 0782 0000

N/F HABASHI
R610 030 000 0782 0000

EXISTING WATER LEGEND

- EXISTING WATER MAIN
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING METER

PROPOSED WATER LEGEND

- PROPOSED WATER MAIN
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE
- PROPOSED METER

EXISTING SEWER LEGEND

- EXISTING GRAVITY SEWER LINE
- EXISTING GRAVITY SEWER MANHOLE
- EXISTING FORCE MAIN

PROPOSED SEWER LEGEND

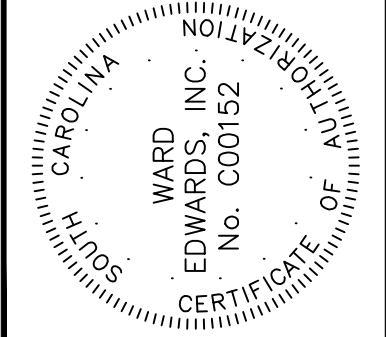
- PROPOSED GRAVITY SEWER LINE
- PROPOSED GRAVITY SEWER MANHOLE
- PROPOSED FORCE MAIN
- PROPOSED SERVICE LATERAL

EXISTING DRAINAGE LEGEND

- EXISTING STORM DRAIN (SOLID WALL)
- EXISTING STORM DRAIN (PERFORATED CMP)
- EXISTING STORM STRUCTURE

PROPOSED DRAINAGE LEGEND

- PROPOSED STORM DRAIN (SOLID WALL)
- PROPOSED STORM STRUCTURE



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HILTON HEAD ISLAND, SC

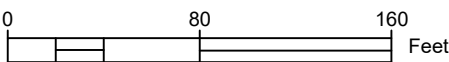
PROPOSED DRAINAGE SYSTEM

VERTICAL DATUM:

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PROJECT #:	HHC003
DATE:	05/30/18
DESIGNED BY:	CPB
CHECKED BY:	ELH
SCALE:	1"=60'

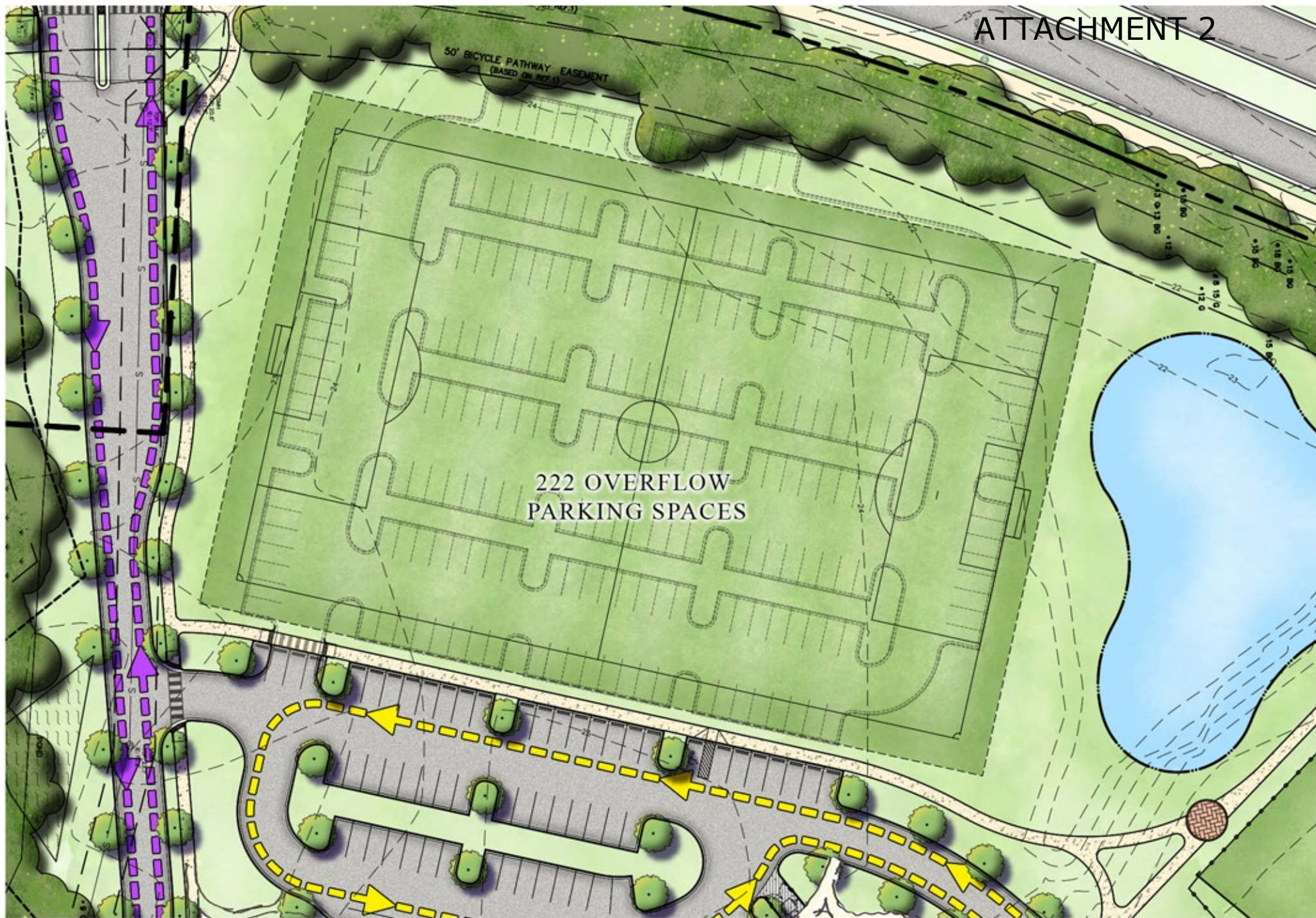
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EXHIBIT H





Canopy Lot Coverage: +/- 21.6 Acres (78%)
Lot Area Not Covered by Canopy: +/- 6.2 Acres (22%)

Total Acreage: 27.78 Acres



222 OVERFLOW
PARKING SPACES

50' BICYCLE PATHWAY EASEMENT
(BASED ON REF. 1)

Scale: 1" = 60' 00"



HILTON HEAD CHRISTIAN ACADEMY
OVERFLOW PARKING EXHIBIT
JULY 10, 2018

HHCA AERIAL 2004

ATTACHMENT 3



Town of Bluffton
Created on 8/28/2018
0 20 40 80 Yards

Traffic Impact Analysis

**Hilton Head Christian Academy
Bluffton, SC**

Prepared for:
Hilton Head Christian Academy

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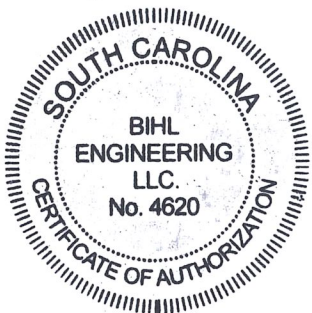


**Traffic Impact Analysis
Hilton Head Christian Academy
Bluffton, SC**

**Prepared for:
Hilton Head Christian Academy**

**Prepared by:
Bihl Engineering, LLC
304 Meeting Street, Suite D
Charleston, SC 29401**

**Mail:
P.O. Box 31318
Charleston, SC 29417
(843) 637-9187**



Updated July 2018

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1.0 Executive Summary

The planned Hilton Head Christian Academy campus will be located on Bluffton Parkway between Buckwalter Parkway and Masters Way in Bluffton, SC. Hilton Head Christian Academy is currently a 372 student school located on Gardner Drive in Hilton Head Island, SC. The proposed new school will serve students from Kindergarten through 12th grade. The school is planned to be completed in phases. For the purposes of this Traffic Impact Analysis (TIA) Phase 1 includes 528 students, assumed to be complete by 2020, and Buildout includes 800 students, assumed to be complete by 2029.

The new development will be served by three driveways. Site Driveway #1 will be located on Bluffton Parkway and will be used by lower school parents for drop-off and pick-up, visitors, staff, and self-driven upper school students. Site Driveway #2 and Site Driveway #3 will be located on Masters Way. Site Driveway #2 will be used by self-driven upper school students while Site Driveway #3 will be used by middle and upper school parents for drop-off and pick-up and staff.

This report presents the traffic analyses and recommendations for transportation improvements required to meet anticipated traffic demands for the AM peak hour and school PM peak hour conditions for the phase 1 and Buildout conditions. This report updates the previous report (5/29/18 study) for the site and a phased review of the projected conditions and reflects the changes to the masterplan requested as part of the staff review.

Existing conditions analysis shows that the study area intersections currently operate acceptably at LOS D or better with the following exceptions: Bluffton Parkway at Masters Way/Crossings Boulevard during the peak hours and H.E. McCracken Circle at Masters Way during the AM peak hour.

In the 2020 No Build conditions analysis the study area intersections are projected to operate similarly to the Existing conditions. With the recommended improvements the 2020 Build conditions analysis shows the study area intersections operating similarly or better than the 2020 No Build conditions, operating at LOS D or better.

Based on the results of the analysis, the following transportation related items are recommended as a part of 2020 Phase 1:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
 - Optimization of signal timing splits
- Buckwalter Parkway at H.E. McCracken Circle (north)
 - Installation of a westbound right-turn lane on H.E. McCracken Circle

- Bluffton Parkway at Masters Way/Crossings Boulevard
 - Signalization of the intersection including the redesign of the intersection to current Beaufort County standards including the installation of a northbound left-turn lane on Masters Way and a review of the design criteria of the intersection including sight distance, turn radii, etc.
- Masters Way at H.E. McCracken Circle (north)
 - Installation of a southbound right-turn lane on Masters Way
- Bluffton Parkway at Site Driveway #1
 - Design intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.
 - Exclusive left-turn and right-turn lanes exiting the site
- Masters Way at Site Driveway #3
 - Installation of a southbound right-turn lane on Masters Way
 - Exclusive left-turn and right-turn lanes exiting the site
- Stratify bell schedule from existing schools in area to limit overlap of traffic
- Stagger upper and lower school bell schedules
- Coordinate with the Pinecrest neighborhood regarding Site Driveway #2
- Coordinate with the Town of Bluffton on an event management plan as needed

In the 2029 No Build conditions analysis the study area intersections are projected to operate acceptably with the following exceptions: Bluffton Parkway at Masters Way/Crossing Boulevard during the peak hours and H.E. McCracken Circle (north) at Masters Way and Buckwalter Parkway at H.E. McCracken Circle (north) during the AM peak hour. In the 2029 No Build conditions analysis, signal timing splits were optimized at the intersection of Bluffton Parkway at Buckwalter Parkway. With the recommended improvements the 2029 Build conditions analysis shows the study area intersections operating similarly or better than the 2029 No Build conditions.

Based on the results of the analysis, the following transportation related items are recommended as a part of 2029 Build Conditions:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
 - Optimization of signal timing splits
- Bluffton Parkway at Masters Way/Crossings Boulevard
 - Optimization of signal timing splits
 - Installation of a second westbound left-turn lane on Bluffton Parkway and widening southbound Masters Way to two receiving lanes from Bluffton Parkway to Site Driveway #3
- Masters Way at H.E. McCracken Circle (north)
 - Installation of westbound right-turn lane on H.E. McCracken Circle (north)
 - Coordinate with the Beaufort County School District

- Masters Way at Site Driveway #3
 - Installation of a northbound left-turn lane on Masters Way

Results in this report are based solely on traffic studies and are considered input into final design considerations. The final design will be determined by the project engineer after other design elements (such as, but not limited to, utilities, stormwater, etc.) are taken into consideration.

2.0 Introduction

The planned Hilton Head Christian Academy campus will be located on Bluffton Parkway between Buckwalter Parkway and Masters Way in Bluffton, SC. Hilton Head Christian Academy is currently a 372 student school located on Gardner Drive in Hilton Head Island, SC. The proposed new school will serve students from Kindergarten through 12th grade. The school is planned to be completed in phases. For the purposes of this TIA Phase 1 includes 528 students, assumed to be complete by 2020, and Buildout includes 800 students, assumed to be complete by 2029. The new development will be served by three driveways.

3.0 Inventory

3.1 Study Area

The study area for the traffic impact analysis includes the following existing intersections based on discussions with Beaufort County staff:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
- Bluffton Parkway at Masters Way/Crossings Boulevard
- Buckwalter Parkway at H.E. McCracken Circle (north)
- H.E. McCracken Circle (north) at Masters Way

Figure 1 (Appendix) shows the site location and **Figure 2 (Appendix)** shows the project conceptual site plan.

3.2 Existing Conditions

Roadways in the project vicinity include Bluffton Parkway, Buckwalter Parkway, Masters Way, H.E. McCracken Circle, Crossings Boulevard, Pinecrest Way, and Hampton Hall Boulevard.

Bluffton Parkway is a four-lane minor arterial roadway with a landscaped median, left and right-turn lanes, and a posted speed limit of 35 miles per hours (mph) in the vicinity of the site. Per 2017 South Carolina Department of Transportation (SCDOT) Average Annual Daily Traffic (AADT) counts Bluffton Parkway experiences approximately 21,400 vehicles per day (vpd) in the vicinity of the site.

Buckwalter Parkway is a four-lane roadway with a landscaped median and a posted speed limit of 45 mph in the vicinity of the site. There is a school zone south of the project site for Cross Schools with a speed limit of 25 mph while the sign is flashing. Per 2017 SCDOT AADT counts Buckwalter Parkway experienced approximately 20,000 vpd north of Bluffton Parkway, 9,000 vpd south of Bluffton Parkway, and approximately 5,900 vpd south of H.E. McCracken Circle.

Masters Way is a two-lane roadway that connects Bluffton Parkway to H.E. McCracken Circle. Masters Way currently experience heavy congestion during the school pick-up and drop-off times.

H.E. McCracken Circle is a two-lane lane roadway with a posted speed limit of 25 mph which loops to connect to Buckwalter Parkway in two locations. H.E. McCracken Circle provides access to Bluffton High School, Boys and Girls Club of Bluffton, Bluffton Early Learning Center, Bluffton Elementary School, and H.E. McCracken Middle School. H.E. McCracken Circle forms a loop and connects to Buckwalter Parkway in two locations. The northern connection is studied in this analysis. H.E. McCracken Circle experiences congestion during peak school times.

Crossings Boulevard is a two-lane residential roadway with posted speed limit of 20 mph.

Pinecrest Way is a residential roadway that connects Masters Way to Bluffton Parkway. It has been noted that drivers sometimes cut through Pinecrest Way to access Bluffton Parkway.

Hampton Hall Boulevard is a residential roadway that provides access to the gated Hampton Hall residential development.

Figure 3 (Appendix) shows the existing roadway laneage in the study area.

4.0 Traffic Generation

The traffic generation potential of the proposed development was developed using locally collected data from the existing Hilton Head Christian Academy located on Hilton Head Island, SC and data provided by the client. Turning movement counts were performed in February 2018 from 7:00 AM to 9:00 AM and from 2:00 PM to 6:00 PM at the existing Hilton Head Christian Academy driveway, located on Gardner Drive in Hilton Head Island, SC. These traffic counts are included in the **Appendix**.

The collected traffic counts were used to calculate the site specific peak trips in and out of the site. The peak trips were divided by the total number of students (372 students) to obtain the number of trips per student rate. **Table 1** summarizes the trip generation rate development for the existing Hilton Head Christian Academy.

Table 1: Calculated Trip Generation Rate – Based on Current 372 Student Population				
	AM Peak Hour		School PM Peak Hour	
	Trips	Split	Trips	Split
Total Trip Entering Site	214	72%	76	35%
Total Trips Exiting Site	83	18%	139	65%
Total Trips	297	100%	215	100%
Trips/Student¹	0.80		0.58	

1. The existing student population of 372 students was used to calculate the trips per student

As shown in **Table 1**, the site-specific trip generation rate was calculated to be 0.80 trips per student with a 72%/18% entering/exiting split during the AM peak hour and 0.58 trips per student with a 35%/65% entering/exiting split during the school PM peak hour.

Table 2 summarizes the Phase 1 peak hour trips associated with the proposed school.

Table 2: Phase 1 Trip Generation							
Land Use and Intensity	ITE Land Use Code	AM Peak Hour of Generator			PM Peak Hour of Generator		
		Total	In	Out	Total	In	Out
Hilton Head Christian Academy 528 students	Local ¹	422	304	118	306	107	199
Driveway Trips		422	304	118	306	107	199

1. Local data collected from the existing Hilton Head Christian Academy driveway. Trip generation rates development shown in **Table 1**.

As shown in **Table 2**, Phase 1 of the proposed development is projected to generate 422 trips during the AM peak hour (304 entering and 118 exiting) and 306 trips during the school PM peak hour (107 entering and 199 exiting).

Table 3 summarizes the Buildout peak hour trips associated with the proposed school.

As shown in **Table 3**, buildout of the proposed development is projected to generate 640 trips during the AM peak hour (461 entering and 179 exiting) and 464 trips during the school PM peak hour (162 entering and 302 exiting). 422 of these trips are associated with Phase 1 in the AM peak hour and 306 of these trips are associated with Phase 1 during the school PM peak hour.

Table 3: Buildout Trip Generation							
Land Use and Intensity	ITE Land Use Code	AM Peak Hour of Generator			PM Peak Hour of Generator		
		Total	In	Out	Total	In	Out
Hilton Head Christian Academy 800 students	Local ¹	640	461	179	464	162	302
Driveway Trips		640	461	179	464	162	302

2. Local data collected from the existing Hilton Head Christian Academy driveway. Trip generation rates development shown in **Table 1**.

5.0 Site Traffic Distribution

The proposed project traffic was assigned to the surrounding roadway network. The directional distribution and assignment were based on qualitative knowledge of the project area, zip code location data provided by the client, and existing school traffic patterns.

The following general trip distribution was applied to the project trips:

- 30% to/from the north on Buckwalter Parkway
- 15% to/from the south on Buckwalter Parkway
- 55% to/from the east on Bluffton Parkway

Figures 4 shows the traffic distribution through the study area.

6.0 Site Circulation

Based on discussions with the project team and school staff, there will be a drop-off and pick-up location for the lower school, middle and upper school, and buses. **Figure 2** shows the planned school circulation.

The new development will be served by three driveways. Site Driveway #1 will be located on Bluffton Parkway and will be used by lower school parents for drop-off and pick-up, visitors, staff, and self-driven upper school students. Site Driveway #2 and Site Driveway #3 will be located on Masters Way. Site Driveway #2 will be used by self-driven upper school students while Site Driveway #3 will be used by middle and upper school parents for drop-off and pick-up and staff.

The lower school drop-off and pick-up will occur between the lower school (admin) building and the future building (heart). To access this parent vehicles will use the full access driveway (Site Driveway #1) located on Bluffton Parkway. The proposed site plan shows approximately 1,200 feet between the drop-off area and Bluffton Parkway.

The middle and upper school drop-off and pick-up will occur south of the middle school building. To access this parent vehicles will use the full access driveway (Site Driveway #3) located on Masters Way. The proposed site plan shows approximately 815 feet between the drop-off area to Masters Way.

The bus drop-off is planned to be in the northernmost parking area by the practice field. Two buses are planned in the future.

7.0 Traffic Volumes

7.1 Existing Traffic

Peak hour intersection turning movement counts including vehicular, pedestrian, and heavy vehicle traffic were performed in February 2018 from 7:00 AM to 9:00 AM and from 2:00 PM to 6:00 PM at the following intersections:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
- Bluffton Parkway at Masters Way/Crossings Boulevard
- Buckwalter Parkway at H.E. McCracken Circle (north)
- H.E. McCracken Circle (north) at Masters Way

The PM peak data collection period was selected to correspond with the expected dismissal time for the school. The PM peak hour analysis for the proposed school is expected to occur before the typical peak of adjacent street traffic.

Traffic volumes at Pinecrest Way were estimated for the Masters Way at Site Driveway #2/Pinecrest Way analysis.

The turning movement count data is included in the **Appendix** and the AM and school PM peak hour existing traffic volumes are shown in **Figure 5 (Appendix)**.

7.2 2020 Phase 1 and 2029 No Build Traffic

Historic growth is defined as the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area.

A 3.25% per year growth rate was used for Bluffton Parkway and Buckwalter Parkway traffic and a growth rate of 1.0% per year was used for other roadway traffic for this analysis.

The 2020 No Build traffic volumes include existing traffic grown to the buildout year. **Figure 6 (Appendix)** and **Figure 7 (Appendix)** show the 2020 No Build AM and school PM peak hour traffic volumes, respectively.

The 2029 No Build traffic volumes include existing traffic grown to the buildout year. **Figure 8 (Appendix)** and **Figure 9 (Appendix)** show the 2029 No Build AM and school PM peak hour traffic volumes, respectively.

7.3 Project Traffic

The AM and school PM peak hour projected project trips were assigned based on the trip distribution discussed in **Section 5**.

7.4 2020 Phase 1 and 2029 Build Traffic

The 2020 total traffic volumes include the 2020 background traffic and the proposed development traffic at buildout. The 2020 AM and school PM peak hour total traffic volumes are shown in **Figure 6 (Appendix)** and **Figure 7 (Appendix)**, respectively.

The 2029 total traffic volumes include the 2029 background traffic and the proposed development traffic at buildout. The 2029 AM and school PM peak hour total traffic volumes are shown in **Figure 8 (Appendix)** and **Figure 9 (Appendix)**, respectively.

Intersection volume development worksheets are included in the **Appendix**.

8.0 Capacity Analysis

Capacity analyses were performed for the AM and school PM peak hours for the Existing, 2020 and 2029 No Build, and 2020 and 2029 Build conditions using the Synchro Version 10 software to determine the operating characteristics of the adjacent roadway network and the impacts of the proposed project. The analyses were conducted with methodologies contained in the *Highway Capacity Manual 6th Edition A Guide for Multimodal Mobility Analysis* (Transportation Research Board, December 2016).

Capacity of an intersection is defined as the maximum number of vehicles that can pass through an intersection during a specified time, typically an hour. Capacity is described by level of service (LOS) for the operating characteristics of an intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F being the worst.

LOS for signalized intersections is determined by the overall intersection operations and is reflected in average delay per vehicle. LOS D or better is typically considered acceptable for signalized intersections. LOS for a two-way stop-controlled (TWSC) intersection is determined by the delay of the poorest performing minor approach, as LOS is not defined for TWSC intersections as a whole. It is typical for minor stop-controlled side streets and driveways on major streets to experience longer delays at LOS E and

LOS F during peak hours while the majority of the traffic moving through the corridor typically experiences little or no delay.

Capacity analyses were performed for the Existing, 2020 and 2029 No Build, and 2020 and 2029 Build AM and school PM peak hour traffic conditions for the following intersections:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard (signalized)
- Bluffton Parkway at Masters Way/Crossings Boulevard (unsignalized)
- Buckwalter Parkway at H.E. McCracken Circle (north) (unsignalized)
- H.E. McCracken Circle (north) at Masters Way (unsignalized)
- Bluffton Parkway at Site Driveway #1 (unsignalized) (Build conditions only)
- Masters Way at Site Driveway #2/Pinecrest Way (unsignalized) (Build conditions only)
- Master Way at Site Driveway #3 (unsignalized) (Build conditions only)

Existing signal timings were applied to the signalized intersection for the intersection analyses.

It is expected that with the addition of the new school, and stratified bell schedules between the new school and the existing schools in the vicinity and traffic on the school related approaches a more balanced peaking with more consistent arrivals and departures throughout the peak hours would be expected. To better reflect the expected conditions, the peak hour factor (PHF) for the northbound approach of the intersection of Bluffton Parkway at Masters Way (school PM peak hour), the westbound approach of the intersection of Buckwalter Parkway at H.E. McCracken Circle (north) (AM and school PM peak hour), as well as the northbound, eastbound, and westbound turning approaches of the intersection of Masters Way at H.E. McCracken Circle (north) (AM and school PM peak hours) were adjusted down to 0.75 in the No Build and Build conditions. Additionally, the PHF for the southbound approach of the intersection of Bluffton Parkway at Buckwalter Parkway was adjusted to 0.95 in the Existing, No Build, and Build school PM peak hours.

Signalization of the intersection of Bluffton Parkway at Masters Way/Crossings Boulevard was considered an improvement for the Build analysis. As part of the signalization, the ability to turn left at Masters Way would be reestablished. For the analysis, the northbound traffic was reassigned to both left and right movements based on the directional distribution experienced on Bluffton Parkway. The projected traffic volumes compared to Manual on Uniform Traffic Control Devices traffic signal warrants is discussed in **Section 8.1.2.**

As needed, an event management plan should be developed in coordination with the Town of Bluffton.

Table 4 summarizes LOS and control delay (average seconds of delay per vehicle) for the projected Existing, 2020 and 2029 No Build, and 2020 and 2029 Build AM and school PM peak hour conditions at the study area intersections.

Table 4:
Level of Service and Delay (average seconds per vehicle)

Intersection	Traffic Control ¹	Existing Conditions		2020 No Build Conditions ³		2020 Build Conditions ^{3,4,5}		2029 No Build Conditions ^{3,5}		2029 Build Conditions ^{3,4,6}	
		AM Peak Hour	School PM peak hour	AM Peak Hour	School PM peak hour	AM Peak Hour	School PM peak hour	AM Peak Hour	School PM peak hour	AM Peak Hour	School PM peak hour
Bluffton Pkwy at Buckwalter Pkwy/Hampton Hall	S	D (38.9)	D (37.0)	D (42.2)	D (37.5)	D (38.0)	D (36.4)	D (41.8)	D (40.1)	D (43.5)	D (41.0)
Bluffton Pkwy at Masters Way/Crossings Blvd	U/S	F (*) – SB	F (180.1) – SB	F (*) – SB	F (236.7) – SB	D (36.3)	B (18.4)	F (*) – SB	F (*) – SB	D (50.0)	C (27.6)
Buckwalter Pkwy at H.E. McCracken Circle (north)	U	C (17.6) – WB	B (10.2) – WB	C (17.4) – WB	B (10.3) – WB	C (20.4) – WB	B (11.6) – WB	E (45.9) – WB	B (11.2) – WB	E (48.2) – WB	B (13.0) – WB
H.E. McCracken Circle (north) at Masters Way	U	F (157.3) – SB	B (10.6) – SB	E (48.2) – SB	B (10.1) – SB	D (34.4) – SB	A (9.9) – SB	F (95.4) – SB	B (10.2) – SB	E (47.0) – SB	A (9.5) – SB
Bluffton Parkway at Site Driveway #1	U	N/A	N/A	N/A	N/A	C (23.0) – NB	C (15.5) – NB	N/A	N/A	F (65.5) – NB	C (23.9) – NB
Masters Way at Site Driveway #2/Pinecrest Way	U	N/A	N/A	N/A	N/A	C (20.4) – EB	B (12.4) – EB	N/A	N/A	D (28.1) – EB	B (14.4) – EB
Masters Way at Site Driveway #3	U	N/A	N/A	N/A	N/A	C (16.3) – EB	B (11.0) – EB	N/A	N/A	C (20.1) – EB	B (12.0) – EB

1. U = unsignalized, S = signalized
2. * = Average delay exceeds 300 seconds
3. Includes adjustment of PHF as discussed in **Section 8.0** at the intersections of Bluffton Parkway at Masters Way/Crossings Boulevard, Buckwalter Parkway at H.E. McCracken Circle (north), H.E. McCracken Circle (north) at Master Way
4. Includes installation of a westbound right-turn lane on H.E. McCracken Circle at the intersection of Buckwalter Parkway at H.E. McCracken Circle (north), installation of a southbound right-turn lane on Masters Way at the intersection of H.E. McCracken Circle (north) at Masters Way, at the intersection of Bluffton Parkway at Masters Way installation of a northbound right-turn lane on Masters Way and signalization of the intersection, and installation of a southbound right-turn lane on Masters Way at the intersection of Masters Way at Site Driveway #3
5. Includes optimization of the signal timing splits at the intersection of Bluffton Parkway at Buckwalter Parkway
6. Includes installation of a westbound right-turn lane on H.E. McCracken Circle (north) at the intersection of H.E. McCracken Circle (north) at Masters Way, installation of a second westbound left-turn lane on Bluffton Parkway at the intersection of Bluffton Parkway at Masters Way, widening of southbound Masters Way from Bluffton Parkway to Site Driveway #3, and installation of a northbound left-turn lane on Masters Way at the intersection of Masters Way at Site Driveway #3

8.1 2020 Phase 1 Conditions

The following sections discuss the capacity analysis for the Existing, 2020 No Build, and 2020 Build conditions.

8.1.1 Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard

The signalized intersection of Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard currently operates at LOS D during the AM and school PM peak hours and is projected to continue to operate similarly in the 2020 No Build conditions. With optimization of the signal timing splits the intersection is projected to continue to operate at LOS D during the AM and school PM peak hours in the 2020 Build conditions.

8.1.2 Bluffton Parkway at Masters Way/Crossings Boulevard

The unsignalized intersection of Bluffton Parkway at Masters Way/Crossings Boulevard currently experiences experience elevated delay (LOS F) during the AM and school PM peak hours in the 2020 No Build conditions. It is recommended that the intersection be signalized and a northbound left-turn lane on Masters Way be installed. As noted previously, the traffic volumes on the northbound approach of Masters Way were reassigned to be able to turn left and right with the signalization of the intersection. With this recommendation the intersection is projected to operate at LOS D during the AM peak hour and at LOS B during the school elevated delay (LOS F) during the AM and PM peak hours. The intersection is projected to continue to PM peak hour in the 2020 Build conditions. Coordination with Beaufort County on signalization of this intersection is recommended.

Preliminary Traffic Signal Warrant Review

The intersection was reviewed to determine if the intersection is expected to be a good candidate for signalization in the future based on peak hour projected traffic volumes. Traffic signal installation warrants are based on national standards outlined in the Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration (2009, updated 2012).

The MUTCD provides guidance on the treatment of right turns in signal warrant analysis, stating, “the study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor street traffic count when evaluating the count against the signal warrants.” For the purposes of this study, 50% of the right turns were included due to the shared nature of the through/right turn lane and the peaking characteristics of the pick-up and drop-off activities at the schools in the area.

Criteria for traffic signal installation are based on national standards outlined in the MUTCD. The MUTCD identifies nine factors to be considered related to the “existing operation and safety at the study location and the potential to improve these conditions.” The MUTCD notes “satisfaction of traffic signal warrant or

warrants does not in itself require the installation of the traffic control signal.” The MUTCD cautions against installation of a traffic signal when it is not warranted.

The MUTCD outlines nine warrants that can be reviewed for a location under consideration for the installation of a traffic signal. The nine warrants are:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

The volume-based warrants (Warrants 1 – 3) were analyzed as a part of this preliminary review of the 2020 Phase 1 Build conditions. In the review, two AM peak hours and two PM peak hours were reviewed. This background traffic from the traffic counts was used and grown to 2020 Phase 1 conditions and the site trips were added to both peak hours to review the projected traffic conditions. A summary table is included in the **Appendix**.

Warrant 1 – Eight-Hour Vehicular Warrant

This warrant has two separate conditions. Condition A reviews whether there is sufficient minor street traffic to warrant the installation of a signal. Condition B reviews whether the traffic volume on the major street is so heavy that it causes excessive delay to the minor street traffic flow. If either Condition is met, the Warrant is satisfied. If neither Condition is met, an analysis of Condition A and Condition B in combination may be performed.

Based on the projected traffic volumes, this intersection is projected to meet warrants for three of the four hours studied for Warrant 1B in the 2020 Phase 1 conditions.

Warrant 2 – Four-Hour Vehicular Warrant

Per the MUTCD, this warrant reviews conditions “where the volume of intersecting traffic is the principal reason to consider installing a traffic signal.”

Per the MUTCD, Figure 4C-1 figure shows that “the need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in

Figure 4C- 1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.”

Based on the projected traffic volumes, this intersection is projected to meet warrants for three of the four hours studied for Warrant 2 in the 2020 Phase 1 conditions.

Warrant 3 – Peak Hour

The MUTCD criteria for this warrant is “for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.” Note that this warrant “shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.” Due to the schools in the area discharging vehicles over a short period of time, Warrant 3 was included in this analysis. A peak-hour warrant was met for all analyzed conditions. It should be noted that it is atypical to install a traffic signal solely based on peak-hour warrants.

Based on the projected traffic volumes, this intersection is projected to meet peak hour warrants for one hour of the four hours studied.

Other Warrants and Summary

Warrants 4 – 9 were not specifically reviewed as part of the preliminary signal warrant analysis. The following discusses a few additional considerations.

Currently there are fewer than 10 pedestrian crossings in an hour. However, this would be expected to increase with the addition of controlled crossing locations at the signalized intersection due to the improved connectivity with the school area. It is expected that this location would also be incorporated as appropriate into the Bluffton Parkway signal system.

This preliminary signal warrant review studied the impacts based on the minor-leg approach. The intersection also has a high left-turn volume during peak times especially in the morning peak period.

Based on the preliminary review of the traffic volumes and the projected use of this intersection for access to multiple school locations, the intersection appears to be a good candidate for signalization in the future.

8.1.3 Buckwalter Parkway at H.E. McCracken Circle (north)

The unsignalized intersection of Buckwalter Parkway at H.E. McCracken Circle (north) currently operates at LOS C and LOS B during the AM and school PM peak hours, respectively, and is projected to continue to operate similarly in the 2020 No Build conditions. It is recommended that a westbound right-turn lane on H.E. McCracken Circle (north) be installed. With this improvement in the 2020 Build conditions the intersection is projected to operate at LOS C and LOS B during the AM and school PM peak hours, respectively.

8.1.4 H.E. McCracken Circle (north) at Masters Way

The unsignalized intersection of H.E. McCracken Circle (north) at Masters Way currently experiences elevated delay (LOS F) during the AM peak hour and operates at LOS B during the school PM peak hour. As discussed in **Section 8.0**, the peak hour factor was adjusted to a minimum of 0.75 in the 2020 No Build and Build conditions. With this adjustment, the intersection is projected to continue to experience elevated delays (LOS E) during the AM peak hour and to operate at LOS B during the school PM peak hour in the 2020 No Build conditions. It is recommended that a southbound right-turn lane on Masters Way be installed. With this improvement, in the 2020 Build conditions the intersection is projected to operate at LOS D during the AM peak hour and at LOS A during the school PM peak hour.

8.1.5 Bluffton Parkway at Site Driveway #1

As shown in the site plan, the intersection of Bluffton Parkway at Site Driveway #1 currently has right- and left-turn lanes into the site as well as exclusive left- and right-turn lanes exiting the site. Site Driveway #1 is planned to operate as a full access point. The unsignalized intersection of Bluffton Parkway at Site Driveway #1 is projected to operate at LOS C during the AM and school PM peak hours in the 2020 Build conditions. The 2020 Build conditions 95th percentile maximum queue is projected to be approximately one vehicle during the AM and school PM peak hours, for northbound left-turning traffic exiting the site. It is recommended that the exclusive northbound right-turn storage should be a minimum of 100 feet to extend past any left-turn blocking experience during peak times. The 95th percentile maximum queue for westbound traffic entering the site is projected to be approximately one vehicle during the AM and school PM peak hours in the 2020 Build conditions. The existing westbound left-turn lane and eastbound right-turn lane on Bluffton Parkway are longer than the projected 95th percentile queue for these movements.

8.1.6 Masters Way at Site Driveway #2/Pinecrest Way and Masters Way at Site Driveway #3

The unsignalized intersections of Masters Way at Site Driveway #2/Pinecrest Way and Masters Way at Site Driveway #3 are projected to operate at LOS C or better during the AM and school PM peak hours in the 2020 Build conditions. Exclusive turn lanes exiting the site are recommended at Driveway #3.

The intersections were further reviewed for consideration of exclusive northbound left-turn lanes and southbound right-turn lanes based on SCDOT Design Manual guidelines and projected intersection volumes. It was found that the AM peak hour conditions met the guidelines for installation of a southbound right-turn lane at the intersection of Masters Way at Site Driveway #3. The worksheets are included in the **Appendix**.

Coordination with the Pinecrest neighborhood is recommended as Site Driveway #2 is across from Pinecrest Way.

8.2 2029 Build Conditions

The following sections discuss the capacity analysis for the Existing, 2029 No Build, and 2029 Build conditions. Improvements from the 2020 Phase 1 conditions were applied to the 2029 Build conditions.

8.2.1 Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard

The signalized intersection of Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard currently operates at LOS D during the AM and school PM peak hours. The signal timing splits were optimized in the 2029 No Build and Build conditions. With the signal optimization the intersection is projected to operate at LOS D during the AM and school PM peak hours in the 2029 No Build and Build conditions.

8.2.2 Bluffton Parkway at Masters Way/Crossings Boulevard

The unsignalized intersection of Bluffton Parkway at Masters Way/Crossings Boulevard currently experiences elevated delay (LOS F) during the AM and PM peak hours. The intersection is projected to continue to experience elevated delay (LOS F) during the AM and school PM peak hours in the 2029 No Build conditions. With the recommended improvements as discussed in **Section 8.1.2** (signalization of the intersection and installation of a northbound left-turn lane on Masters Way) as well as installation of a second westbound left-turn lane on Bluffton Parkway and optimization of the signal timings the intersection is projected to operate at LOS D and LOS C during the AM and school PM peak hours, respectively, in the 2029 Build conditions. To accommodate the dual left-turn lanes the southbound Masters Way will need to be widened to two lanes from Bluffton Parkway to Site Driveway #3 to provide two receiving lanes.

8.2.3 Buckwalter Parkway at H.E. McCracken Circle (north)

The unsignalized intersection of Buckwalter Parkway at H.E. McCracken Circle (north) currently operates at LOS C and LOS B during the AM and school PM peak hours, respectively. The intersection is projected to experience elevated delay (LOS E) during the AM peak hour and to operate at LOS B during the school PM peak hour in the 2029 No Build conditions. With the recommended improvement as discussed in **Section 8.1.3** (installation of a westbound right-turn lane on H.E. McCracken Circle (north)) the intersection is projected to operate similarly to the 2029 No Build conditions during the AM and school PM peak hour conditions, in the 2029 Buildout conditions.

8.2.4 H.E. McCracken Circle (north) at Masters Way

The unsignalized intersection of H.E. McCracken Circle (north) at Masters Way currently experiences elevated delay (LOS F) during the AM peak hour and operates at LOS B during the school PM peak hour. As discussed in **Section 8.0**, the peak hour factor was adjusted to a minimum of 0.75 in the 2029 No Build and Build conditions. With this adjustment, the intersection is projected to continue to experience elevated delays (LOS F) during the AM peak hour and to operate at LOS B during the school PM peak hour in the 2029 No Build conditions. With the recommended improvement as discussed in **Section 8.1.4** (installation of a southbound right-turn lane on Masters Way) as well as installation of westbound right-turn lane on H.E. McCracken Circle (north) the intersection is projected to experience elevated delay (LOS E) and to

operate at LOS A during the AM and school PM peak hours, respectively, in the 2029 Build conditions. This improvement should be coordinate with the Beaufort County School District.

8.2.5 Bluffton Parkway at Site Driveway #1

As shown in the site plan, the intersection of Bluffton Parkway at Site Driveway #1 currently has right- and left-turn lanes into the site as well as exclusive left- and right-turn lanes exiting the site. Site Driveway #1 is planned to operate as a full access point.

The unsignalized intersection of Bluffton Parkway at Site Driveway #1 is projected to operate at LOS F and LOS C during the AM and school PM peak hours, respectively, in the 2029 Build conditions. However, the 2029 Build conditions 95th percentile maximum queue is projected to be approximately three vehicles and two vehicles during the AM and school PM peak hours, respectively, for northbound left-turning traffic exiting the site. The 95th percentile queue represents the maximum queue expected for the turn lane. The 95th percentile maximum queue for westbound traffic entering the site is projected to be approximately two vehicles and one vehicle during the AM and school PM peak hours, respectively, in the 2029 Build conditions.

8.2.6 Masters Way at Site Driveway #2/Pinecrest Way and Masters Way at Site Driveway #3

The unsignalized intersections of Masters Way at Site Driveway #2/Pinecrest Way and Masters Way at Site Driveway #3 are projected to operate at LOS D or better during the AM and school PM peak hours in the Build conditions.

The intersections were further reviewed for consideration of exclusive northbound left-turn lanes and southbound right-turn lanes based on SCDOT Design Manual guidelines and projected intersection volumes. It was found that the AM peak hour conditions met the guidelines for installation of a northbound left-turn lane on Masters Way at the intersection of Masters Way at Site Driveway #3. The worksheets are included in the **Appendix**.

9.0 Conclusion

The proposed new Hilton Head Christian Academy campus will be located on Bluffton Parkway between Buckwalter Parkway and Masters Way in Bluffton, SC. Hilton Head Christian Academy is currently a 372 student school located on Gardner Drive in Hilton Head Island, SC. The proposed new school campus will be served by three driveways. Phase 1 of the proposed development is assumed to be complete by 2020 and Buildout is assumed to be complete by 2029.

Based on the results of the analysis, the following transportation related items are recommended as a part of 2020 Phase 1:

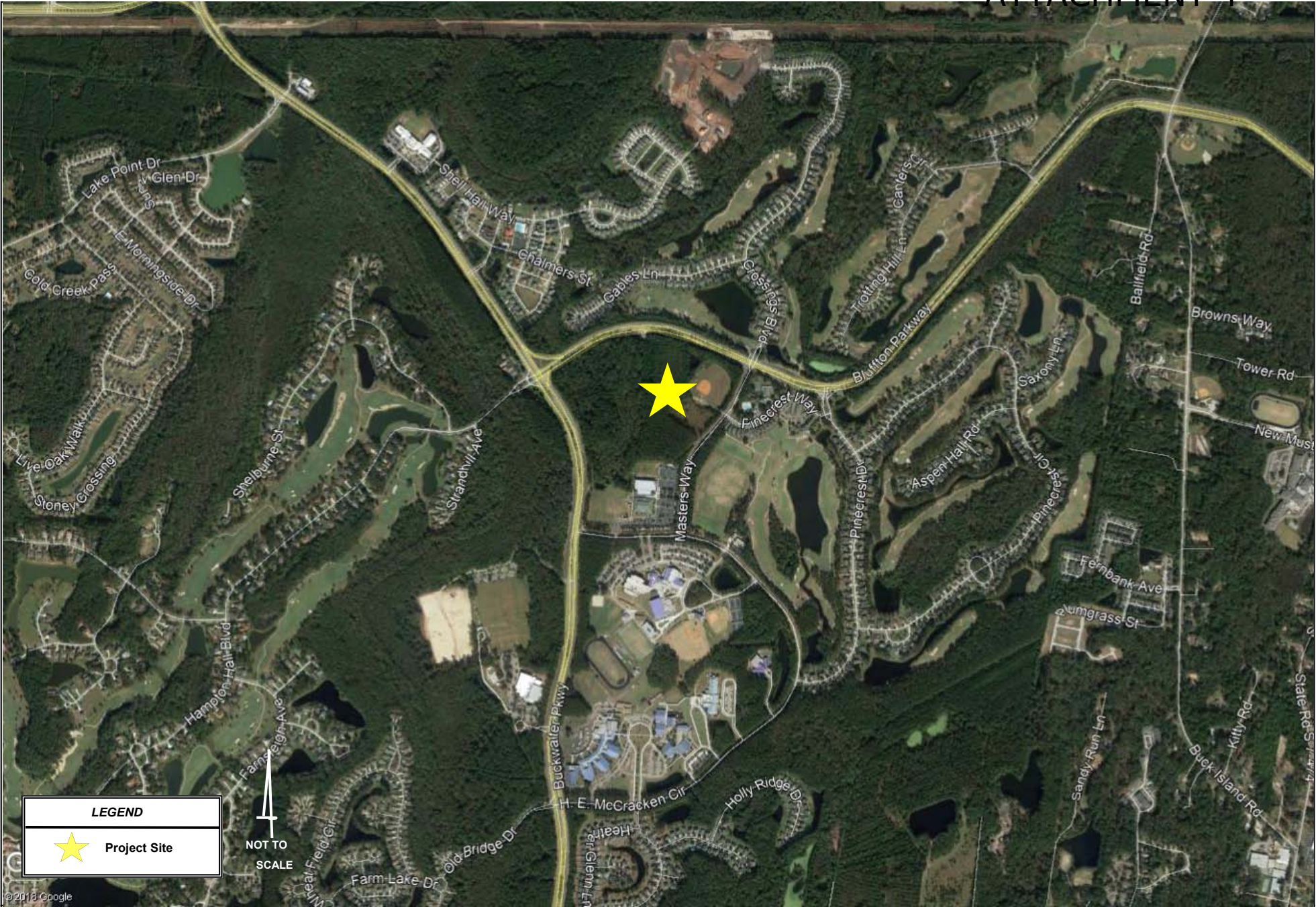
- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
 - Optimization of signal timing splits
- Buckwalter Parkway at H.E. McCracken Circle (north)
 - Installation of a westbound right-turn lane on H.E. McCracken Circle
- Bluffton Parkway at Masters Way/Crossings Boulevard
 - Signalization of the intersection including the redesign of the intersection to current Beaufort County standards including the installation of a northbound left-turn lane on Masters Way and a review of the design criteria of the intersection including sight distance, turn radii, etc.
- Masters Way at H.E. McCracken Circle (north)
 - Installation of a southbound right-turn lane on Masters Way
- Bluffton Parkway at Site Driveway #1
 - Design intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.
 - Exclusive left-turn and right-turn lanes exiting the site
- Masters Way at Site Driveway #3
 - Installation of a southbound right-turn lane on Masters Way
 - Exclusive left-turn and right-turn lanes exiting the site
- Stratify bell schedule from existing schools in area to limit overlap of traffic
- Stagger upper and lower school bell schedules
- Coordinate with the Pinecrest neighborhood regarding Site Driveway #2
- Coordinate with the Town of Bluffton on an event management plan as needed

Based on the results of the analysis, the following transportation related items are recommended as a part of 2029 Build Conditions:

- Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard
 - Optimization of signal timing splits
- Bluffton Parkway at Masters Way/Crossings Boulevard
 - Optimization of signal timing splits
 - Installation of a second westbound left-turn lane on Bluffton Parkway and widening southbound Masters Way to two receiving lanes from Bluffton Parkway to Site Driveway #3
- Masters Way at H.E. McCracken Circle (north)
 - Installation of westbound right-turn lane on H.E. McCracken Circle (north)
 - Coordinate with the Beaufort County School District
- Masters Way at Site Driveway #3
 - Installation of a northbound left-turn lane on Masters Way

Results in this report are based solely on traffic studies and are considered input into final design considerations. The final design will be determined by the project engineer after other design elements (such as, but not limited to, utilities, stormwater, etc.) are taken into consideration.

Appendix



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Hilton Head Christian Academy
Traffic Impact Analysis

Site
Location

Figure 1

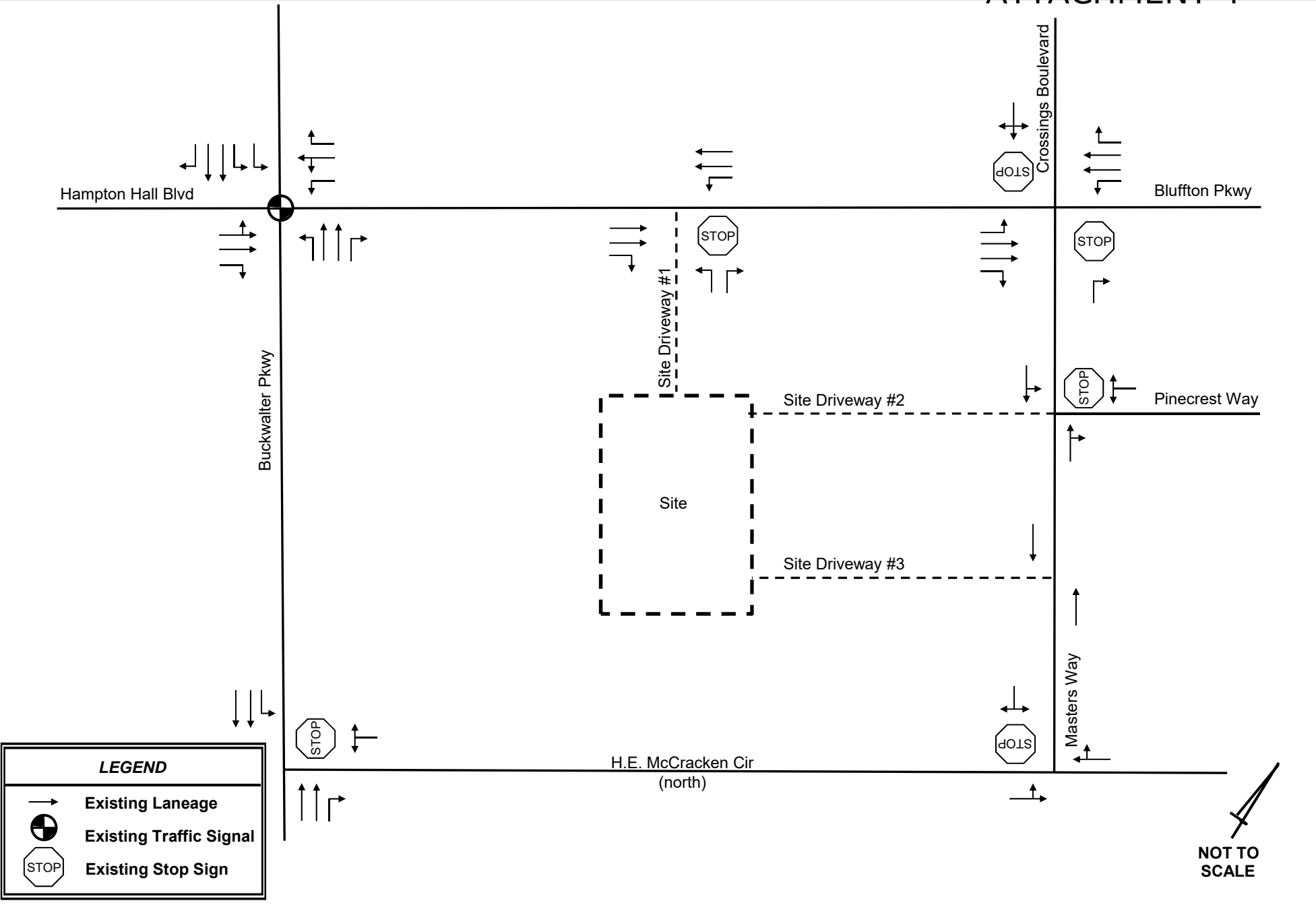


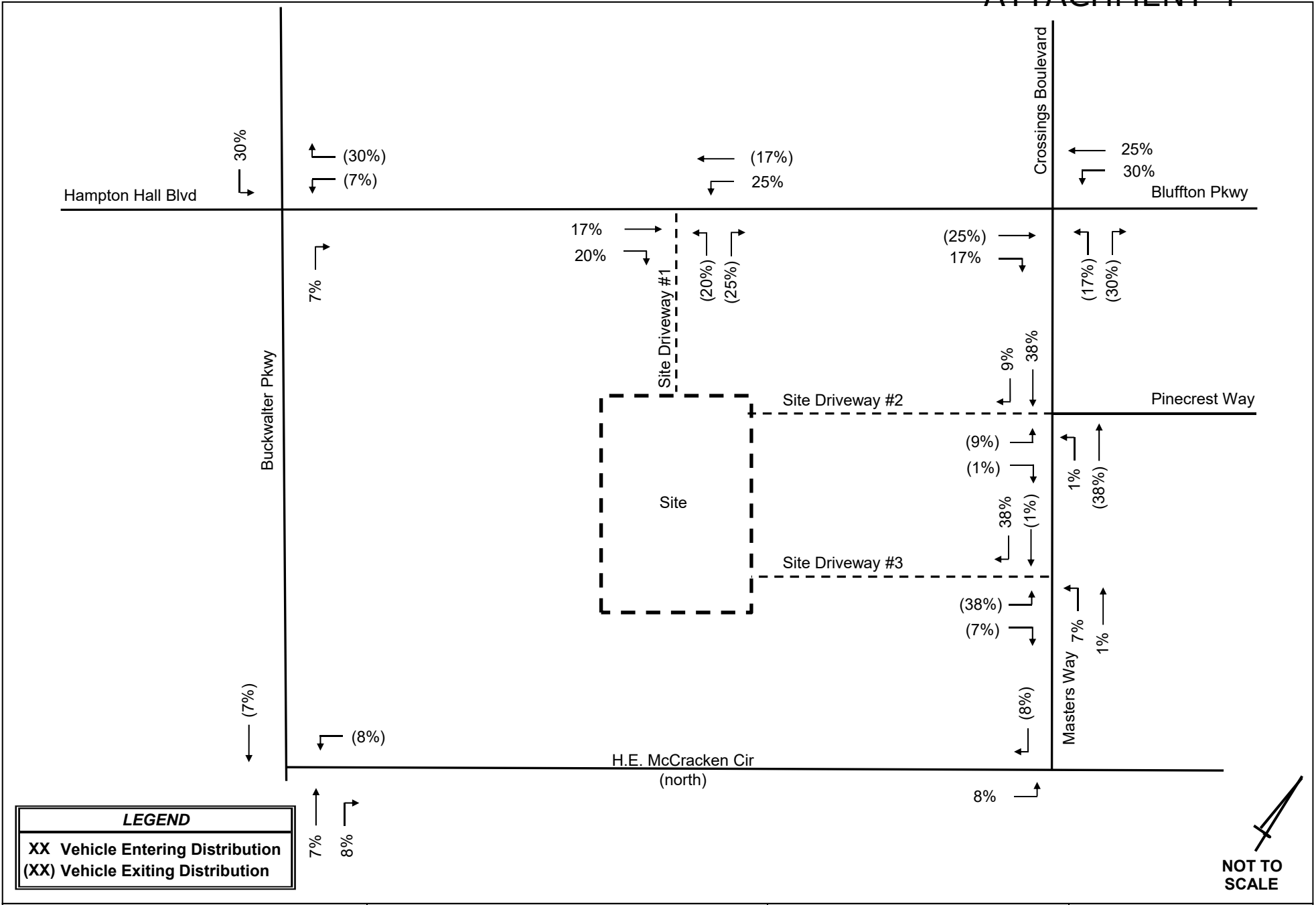
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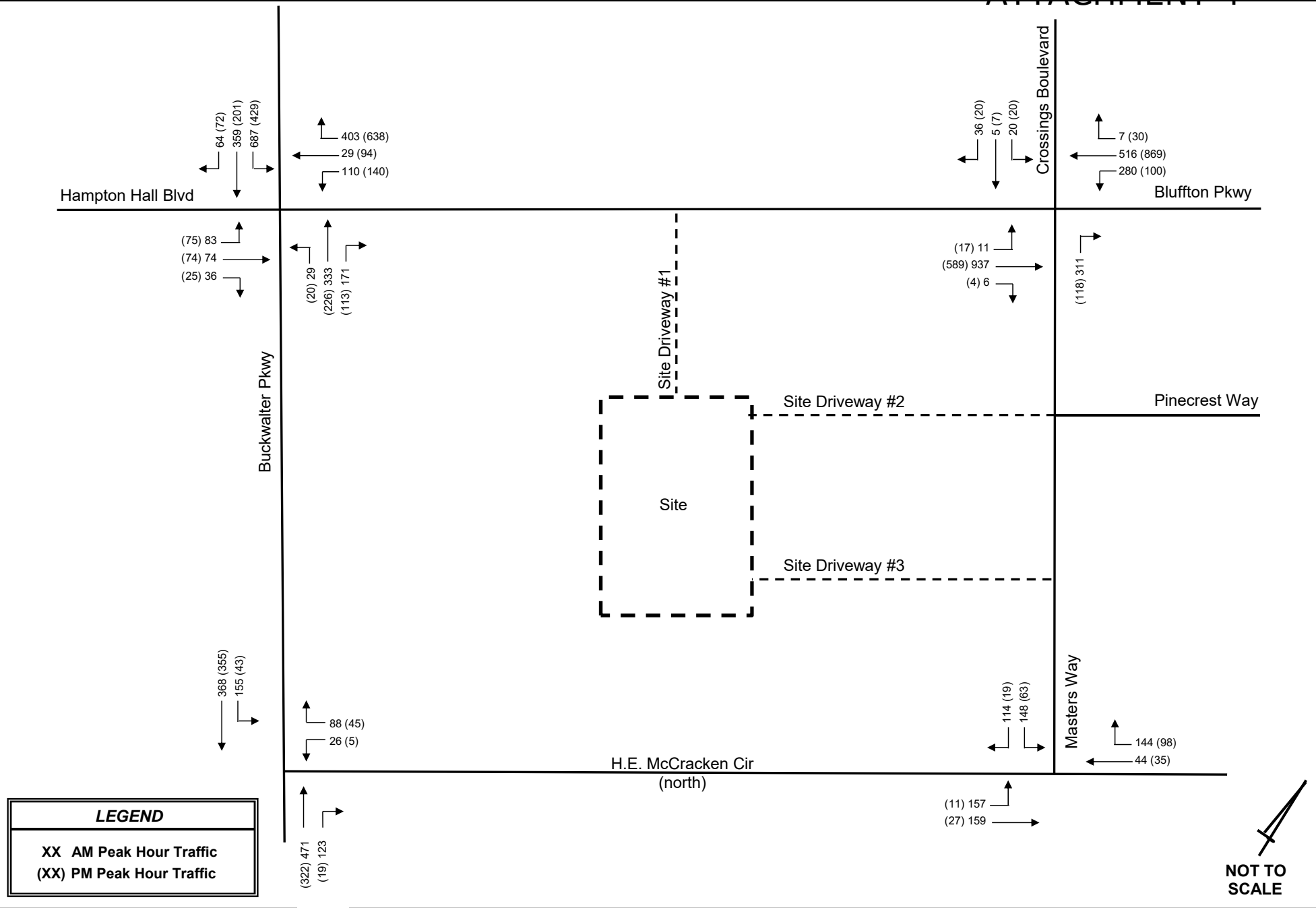
Hilton Head Christian Academy
Traffic Impact Analysis

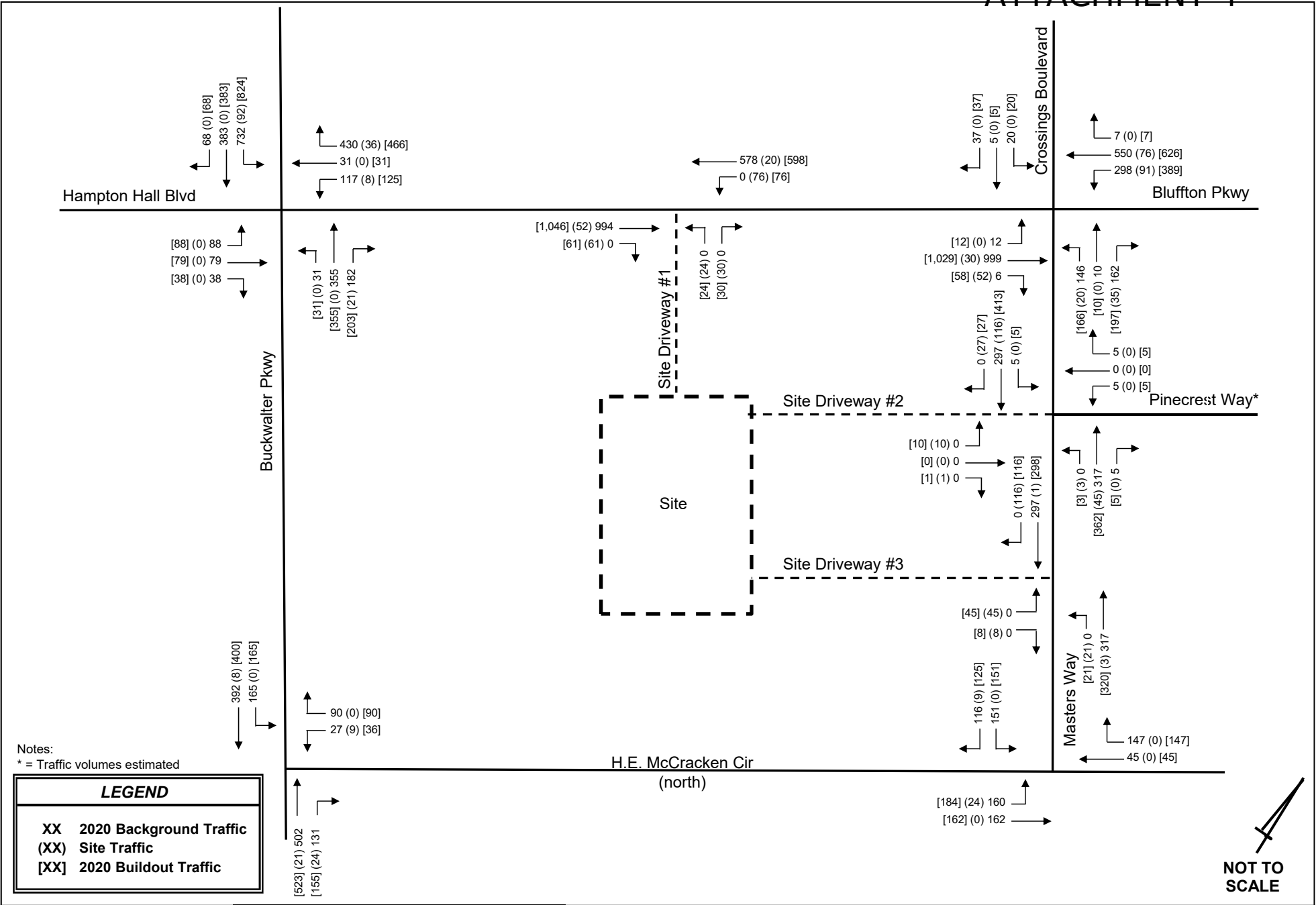
Site
Plan

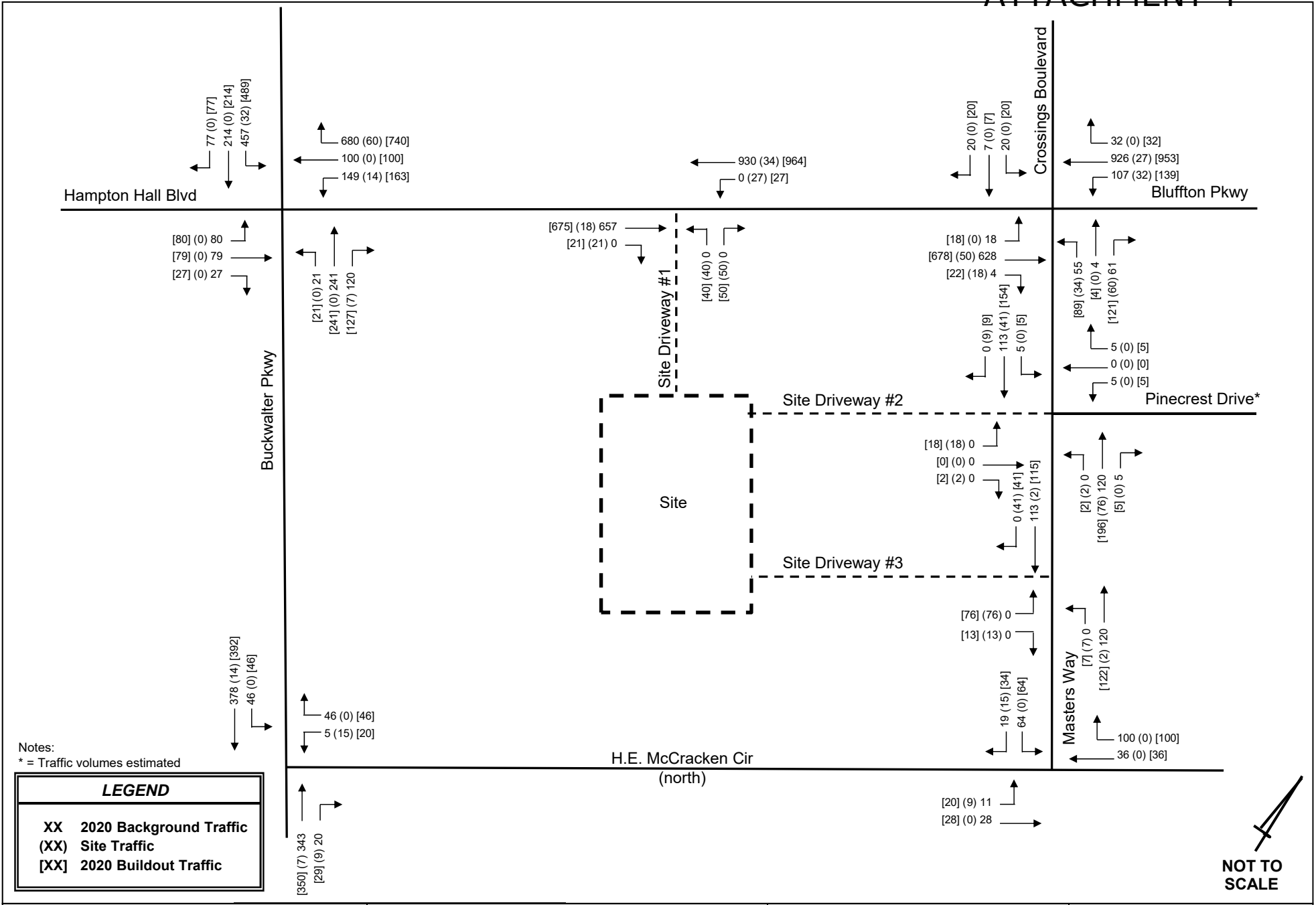
Figure 2

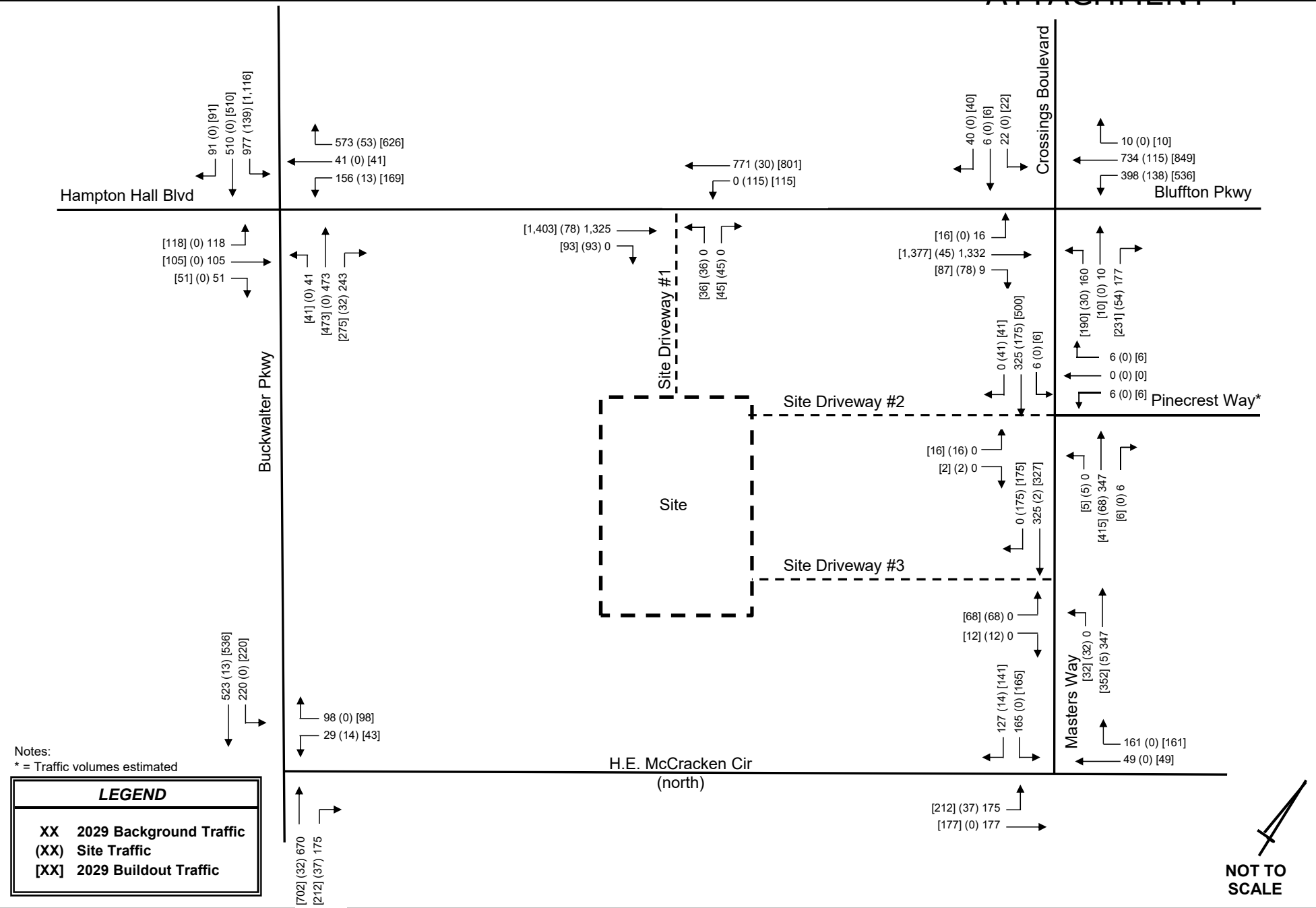


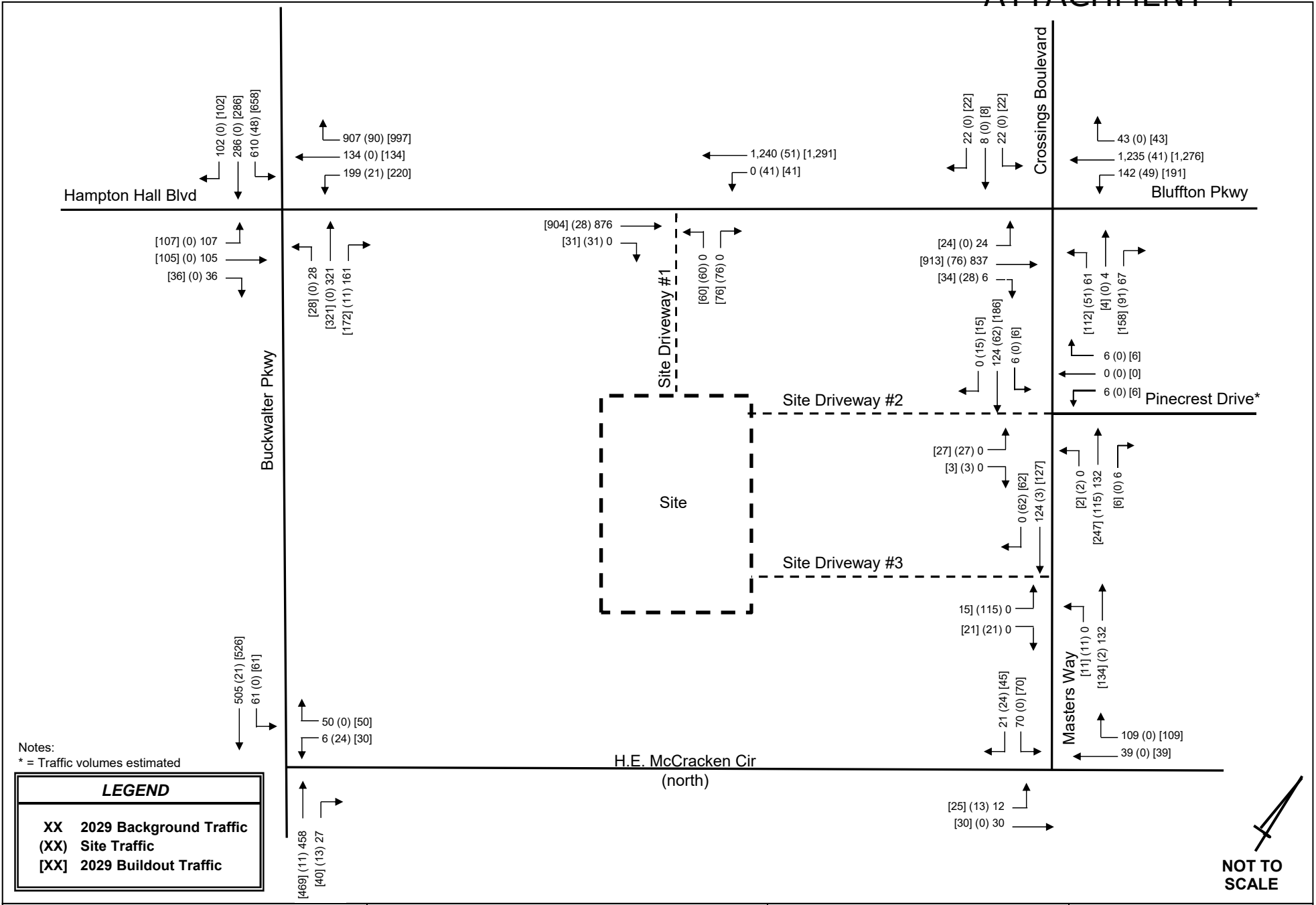












Short Counts

ATTACHMENT 4

File Name : Bluffton Pkwy @ Masters Way-Crossings Blvd

Site Code :

Start Date : 2/14/2018

Page No : 1

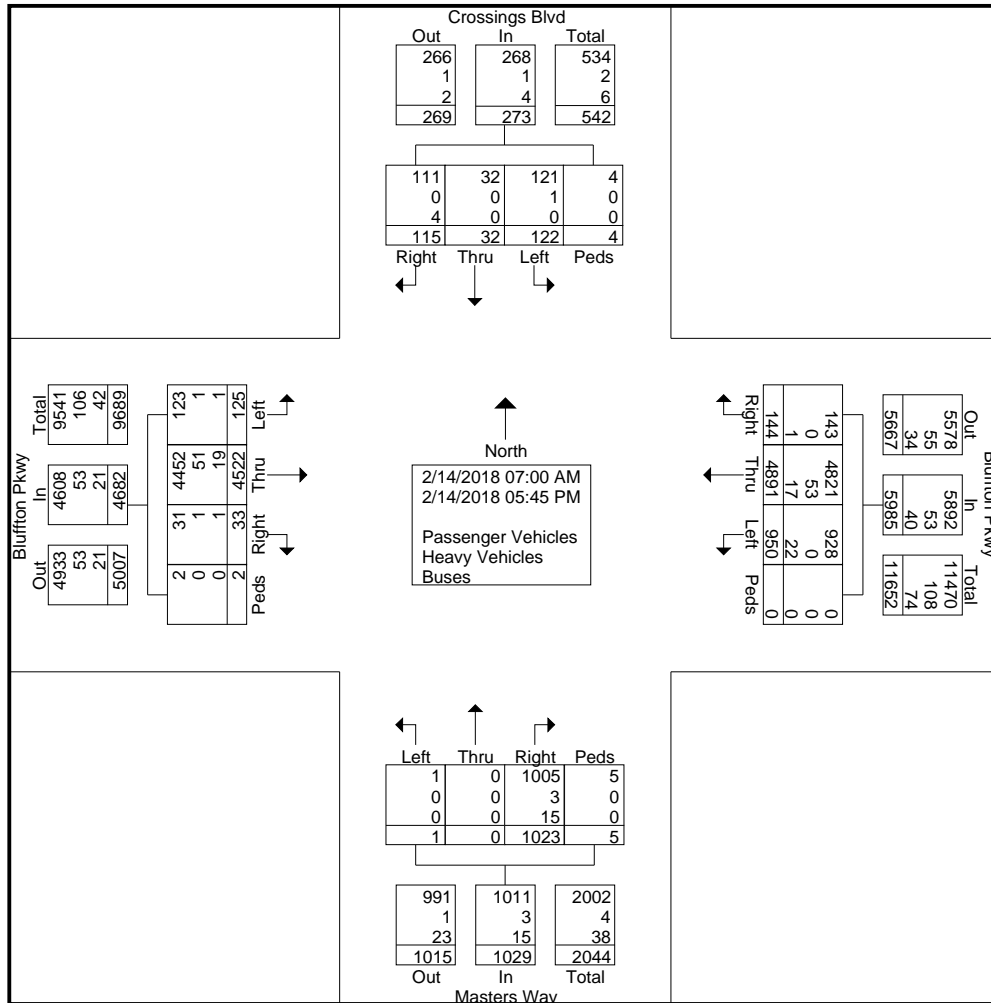
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Crossings Blvd From North				Bluffton Pkwy From East				Masters Way From South				Bluffton Pkwy From West				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	7	1	1	2	29	80	1	0	0	0	18	0	0	211	4	0	354
07:15 AM	5	6	5	0	54	104	0	0	0	0	46	0	3	183	0	0	406
07:30 AM	9	3	9	0	54	113	2	0	0	0	45	2	2	230	2	0	471
07:45 AM	8	1	5	0	34	133	1	0	0	0	69	3	1	275	1	0	531
Total	29	11	20	2	171	430	4	0	0	0	178	5	6	899	7	0	1762
08:00 AM	5	3	9	0	61	138	0	0	0	0	46	0	2	220	1	0	485
08:15 AM	4	1	14	0	103	118	3	0	0	0	98	0	3	221	4	0	569
08:30 AM	3	0	8	0	82	127	3	0	0	0	98	0	5	221	0	0	547
08:45 AM	6	1	4	0	9	138	2	0	0	0	31	0	3	239	0	0	433
Total	18	5	35	0	255	521	8	0	0	0	273	0	13	901	5	0	2034
02:00 PM	7	0	3	0	20	195	6	0	0	0	10	0	7	110	1	0	359
02:15 PM	6	3	2	0	28	176	8	0	0	0	24	0	3	137	2	0	389
02:30 PM	4	1	3	0	43	200	8	0	0	0	20	0	6	147	0	0	432
02:45 PM	7	1	8	0	9	219	6	0	0	0	50	0	7	138	0	0	445
Total	24	5	16	0	100	790	28	0	0	0	104	0	23	532	3	0	1625
03:00 PM	5	3	4	0	17	203	8	0	0	0	25	0	6	161	2	0	434
03:15 PM	5	0	5	0	26	209	5	0	0	0	25	0	0	141	1	0	417
03:30 PM	3	3	3	0	48	238	11	0	0	0	18	0	4	149	1	0	478
03:45 PM	2	0	5	0	68	204	5	0	0	0	113	0	10	188	1	1	597
Total	15	6	17	0	159	854	29	0	0	0	181	0	20	639	5	1	1926
04:00 PM	4	0	4	0	37	277	7	0	0	0	65	0	12	164	2	1	573
04:15 PM	5	0	4	0	29	259	10	0	0	0	47	0	9	187	1	0	551
04:30 PM	8	1	7	0	16	256	9	0	0	0	18	0	5	196	1	0	517
04:45 PM	6	0	2	0	20	257	5	0	0	0	16	0	7	198	3	0	514
Total	23	1	17	0	102	1049	31	0	0	0	146	0	33	745	7	1	2155
05:00 PM	1	1	2	0	37	312	13	0	0	0	35	0	7	225	1	0	634
05:15 PM	4	1	5	2	58	342	7	0	0	0	30	0	3	191	2	0	645
05:30 PM	2	0	2	0	39	305	12	0	1	0	47	0	11	223	0	0	642
05:45 PM	6	2	1	0	29	288	12	0	0	0	29	0	9	167	3	0	546
Total	13	4	10	2	163	1247	44	0	1	0	141	0	30	806	6	0	2467
Grand Total	122	32	115	4	950	4891	144	0	1	0	1023	5	125	4522	33	2	11969
Apprch %	44.7	11.7	42.1	1.5	15.9	81.7	2.4	0	0.1	0	99.4	0.5	2.7	96.6	0.7	0	
Total %	1	0.3	1	0	7.9	40.9	1.2	0	0	0	8.5	0	1	37.8	0.3	0	
Passenger Vehicles	121	32	111	4	928	4821	143	0	1	0	1005	5	123	4452	31	2	11779
% Passenger Vehicles	99.2	100	96.5	100	97.7	98.6	99.3	0	100	0	98.2	100	98.4	98.5	93.9	100	98.4
Heavy Vehicles	1	0	0	0	0	53	0	0	0	0	3	0	1	51	1	0	110
% Heavy Vehicles	0.8	0	0	0	0	1.1	0	0	0	0	0.3	0	0.8	1.1	3	0	0.9
Buses	0	0	4	0	22	17	1	0	0	0	15	0	1	19	1	0	80
% Buses	0	0	3.5	0	2.3	0.3	0.7	0	0	0	1.5	0	0.8	0.4	3	0	0.7

Short Counts

ATTACHMENT 4

File Name : Bluffton Pkwy @ Masters Way-Crossings Blvd
 Site Code :
 Start Date : 2/14/2018
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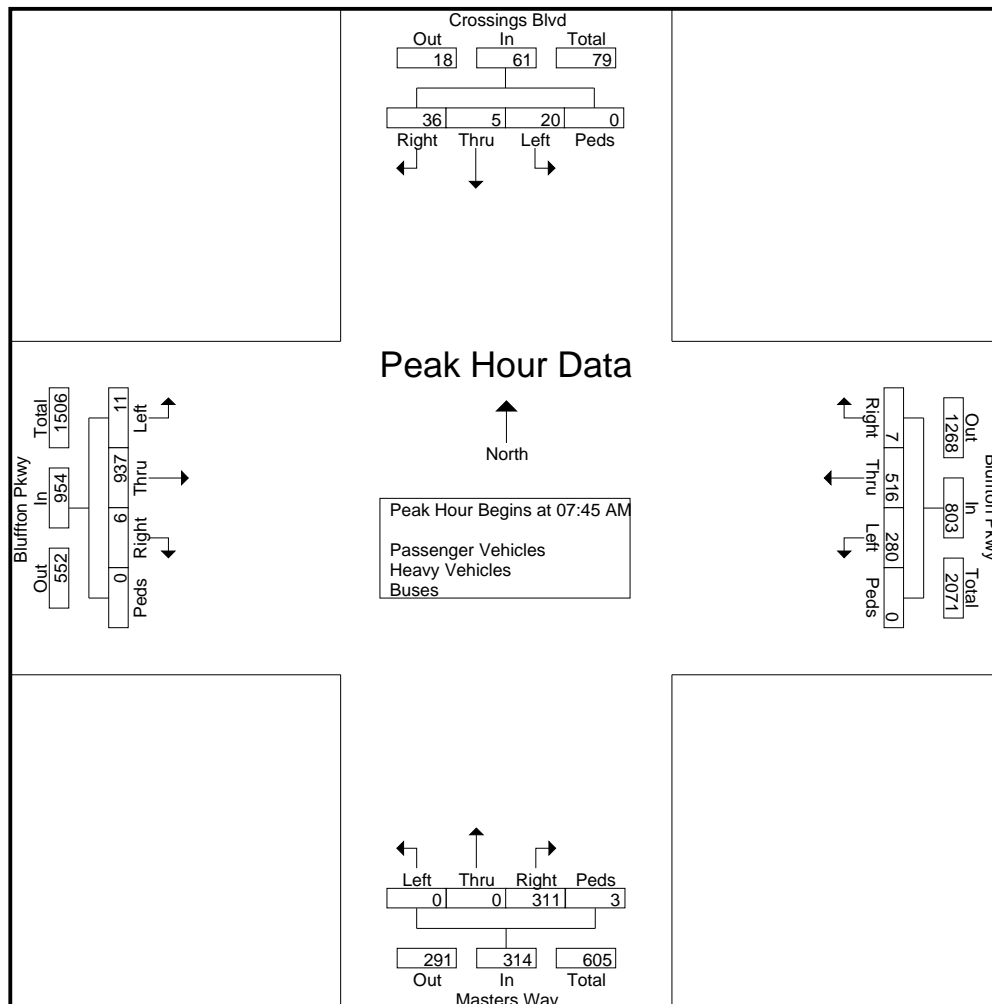


Short Counts

ATTACHMENT 4

File Name : Bluffton Pkwy @ Masters Way-Crossings Blvd
 Site Code :
 Start Date : 2/14/2018
 Page No : 3

	Crossings Blvd From North					Bluffton Pkwy From East					Masters Way From South					Bluffton Pkwy From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	8	1	5	0	14	34	133	1	0	168	0	0	69	3	72	1	275	1	0	277	531
08:00 AM	5	3	9	0	17	61	138	0	0	199	0	0	46	0	46	2	220	1	0	223	485
08:15 AM	4	1	14	0	19	103	118	3	0	224	0	0	98	0	98	3	221	4	0	228	569
08:30 AM	3	0	8	0	11	82	127	3	0	212	0	0	98	0	98	5	221	0	0	226	547
Total Volume	20	5	36	0	61	280	516	7	0	803	0	0	311	3	314	11	937	6	0	954	2132
% App. Total	32.8	8.2	59	0		34.9	64.3	0.9	0		0	0	99	1		1.2	98.2	0.6	0		
PHF	.625	.417	.643	.000	.803	.680	.935	.583	.000	.896	.000	.000	.793	.250	.801	.550	.852	.375	.000	.861	.937

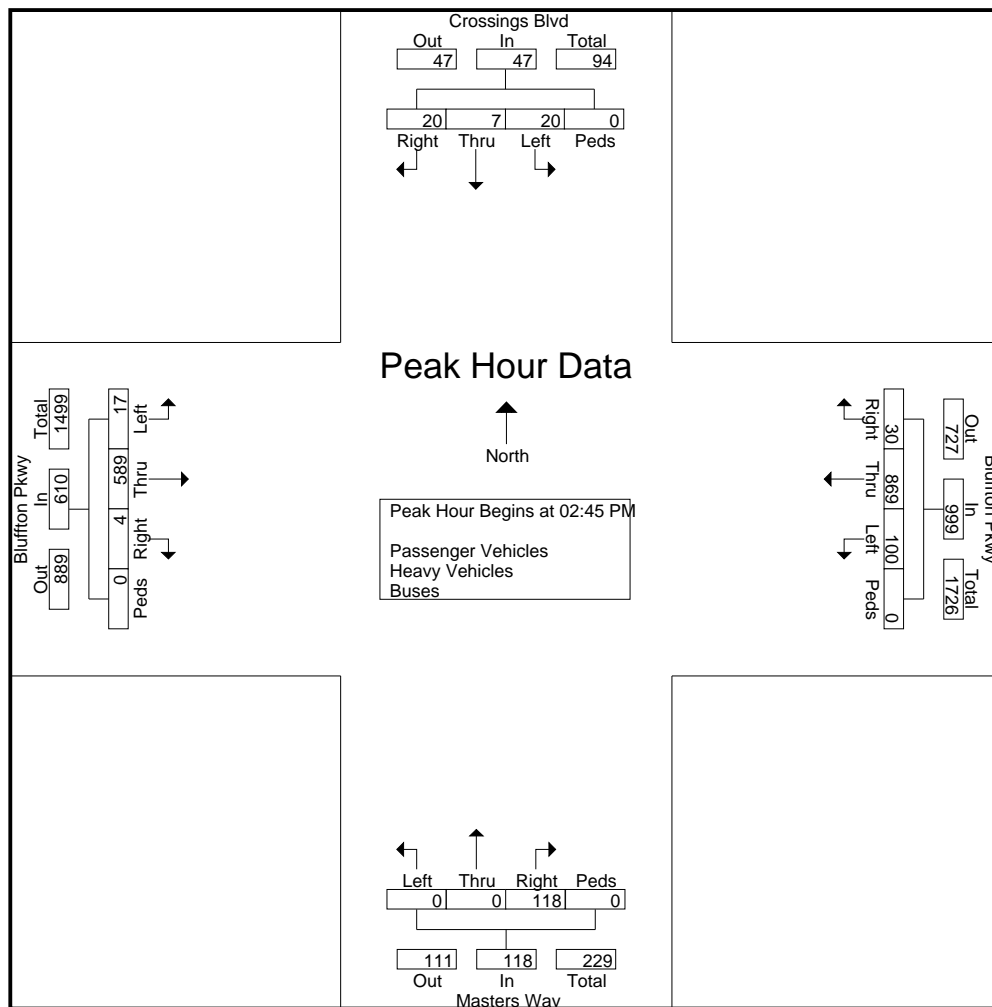


Short Counts

ATTACHMENT 4

File Name : Bluffton Pkwy @ Masters Way-Crossings Blvd
 Site Code :
 Start Date : 2/14/2018
 Page No : 4

	Crossings Blvd From North					Bluffton Pkwy From East					Masters Way From South					Bluffton Pkwy From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	7	1	8	0	16	9	219	6	0	234	0	0	50	0	50	7	138	0	0	145	445
03:00 PM	5	3	4	0	12	17	203	8	0	228	0	0	25	0	25	6	161	2	0	169	434
03:15 PM	5	0	5	0	10	26	209	5	0	240	0	0	25	0	25	0	141	1	0	142	417
03:30 PM	3	3	3	0	9	48	238	11	0	297	0	0	18	0	18	4	149	1	0	154	478
Total Volume	20	7	20	0	47	100	869	30	0	999	0	0	118	0	118	17	589	4	0	610	1774
% App. Total	42.6	14.9	42.6	0		10	87	3	0		0	0	100	0		2.8	96.6	0.7	0		
PHF	.714	.583	.625	.000	.734	.521	.913	.682	.000	.841	.000	.000	.590	.000	.590	.607	.915	.500	.000	.902	.928



Short Counts

ATTACHMENT 4

File Name : Buckwalter Pkwy @ H.E. McCracken Cir

Site Code :

Start Date : 2/14/2018

Page No : 1

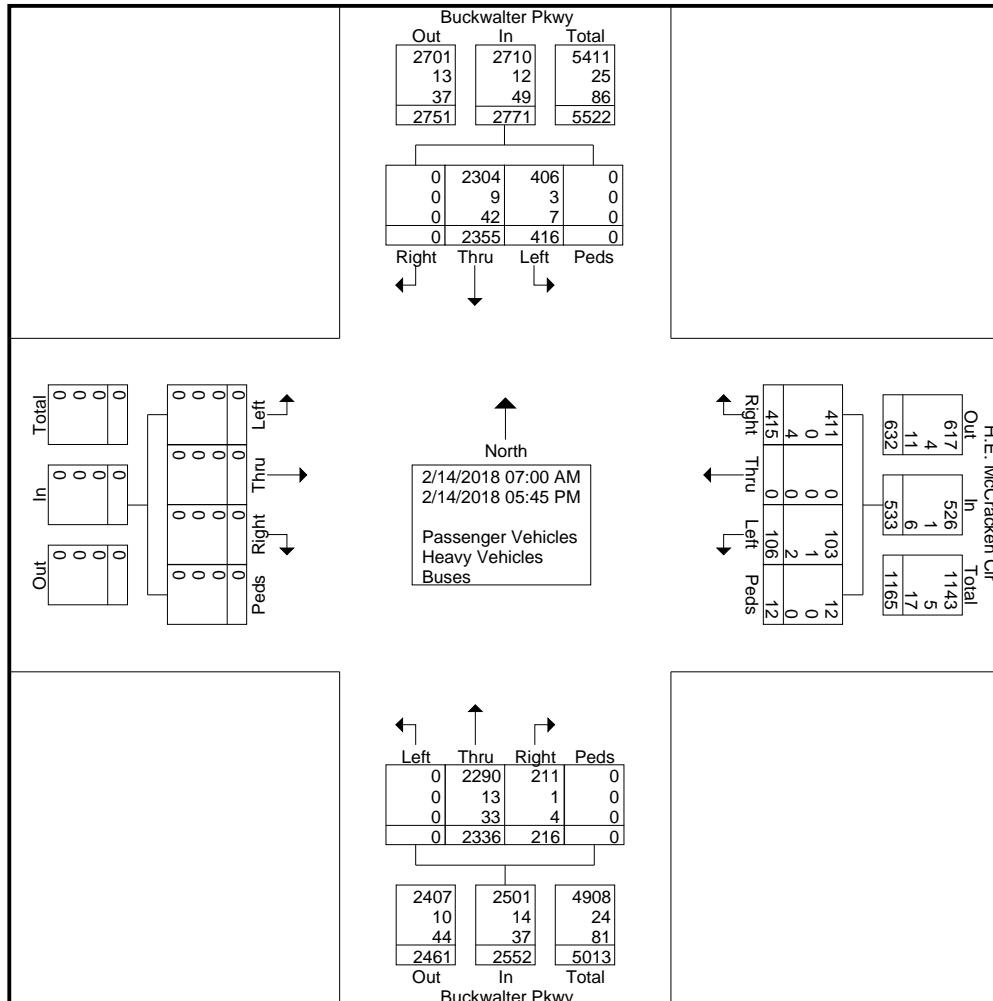
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Buckwalter Pkwy From North				H.E. McCracken Cir From East				Buckwalter Pkwy From South				From West				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00 AM	24	44	0	0	4	0	7	0	0	100	9	0	0	0	0	0	188
07:15 AM	26	58	0	0	2	0	13	0	0	99	4	0	0	0	0	0	202
07:30 AM	29	76	0	0	1	0	17	2	0	151	6	0	0	0	0	0	282
07:45 AM	23	72	0	0	1	0	22	2	0	136	7	0	0	0	0	0	263
Total	102	250	0	0	8	0	59	4	0	486	26	0	0	0	0	0	935
08:00 AM	41	104	0	0	4	0	13	1	0	100	22	0	0	0	0	0	285
08:15 AM	53	109	0	0	4	0	19	1	0	111	41	0	0	0	0	0	338
08:30 AM	38	83	0	0	17	0	34	0	0	124	53	0	0	0	0	0	349
08:45 AM	10	71	0	0	3	0	11	0	0	97	5	0	0	0	0	0	197
Total	142	367	0	0	28	0	77	2	0	432	121	0	0	0	0	0	1169
02:00 PM	6	63	0	0	2	0	2	0	0	59	4	0	0	0	0	0	136
02:15 PM	6	81	0	0	4	0	10	0	0	67	2	0	0	0	0	0	170
02:30 PM	14	96	0	0	1	0	9	0	0	54	1	0	0	0	0	0	175
02:45 PM	7	95	0	0	0	0	19	0	0	95	3	0	0	0	0	0	219
Total	33	335	0	0	7	0	40	0	0	275	10	0	0	0	0	0	700
03:00 PM	6	72	0	0	1	0	7	0	0	73	3	0	0	0	0	0	162
03:15 PM	10	85	0	0	0	0	8	0	0	81	3	0	0	0	0	0	187
03:30 PM	20	103	0	0	4	0	11	0	0	73	10	0	0	0	0	0	221
03:45 PM	15	88	0	0	30	0	79	1	0	97	16	0	0	0	0	0	326
Total	51	348	0	0	35	0	105	1	0	324	32	0	0	0	0	0	896
04:00 PM	12	102	0	0	6	0	25	2	0	131	3	0	0	0	0	0	281
04:15 PM	15	121	0	0	4	0	27	2	0	81	3	0	0	0	0	0	253
04:30 PM	7	121	0	0	4	0	12	1	0	102	5	0	0	0	0	0	252
04:45 PM	9	112	0	0	4	0	8	0	0	115	3	0	0	0	0	0	251
Total	43	456	0	0	18	0	72	5	0	429	14	0	0	0	0	0	1037
05:00 PM	11	149	0	0	2	0	12	0	0	107	3	0	0	0	0	0	284
05:15 PM	12	176	0	0	5	0	19	0	0	89	3	0	0	0	0	0	304
05:30 PM	10	144	0	0	0	0	22	0	0	114	4	0	0	0	0	0	294
05:45 PM	12	130	0	0	3	0	9	0	0	80	3	0	0	0	0	0	237
Total	45	599	0	0	10	0	62	0	0	390	13	0	0	0	0	0	1119
Grand Total	416	2355	0	0	106	0	415	12	0	2336	216	0	0	0	0	0	5856
Apprch %	15	85	0	0	19.9	0	77.9	2.3	0	91.5	8.5	0	0	0	0	0	
Total %	7.1	40.2	0	0	1.8	0	7.1	0.2	0	39.9	3.7	0	0	0	0	0	
Passenger Vehicles	406	2304	0	0	103	0	411	12	0	2290	211	0	0	0	0	0	5737
% Passenger Vehicles	97.6	97.8	0	0	97.2	0	99	100	0	98	97.7	0	0	0	0	0	98
Heavy Vehicles	3	9	0	0	1	0	0	0	0	13	1	0	0	0	0	0	27
% Heavy Vehicles	0.7	0.4	0	0	0.9	0	0	0	0	0.6	0.5	0	0	0	0	0	0.5
Buses	7	42	0	0	2	0	4	0	0	33	4	0	0	0	0	0	92
% Buses	1.7	1.8	0	0	1.9	0	1	0	0	1.4	1.9	0	0	0	0	0	1.6

Short Counts

ATTACHMENT 4

File Name : Buckwalter Pkwy @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
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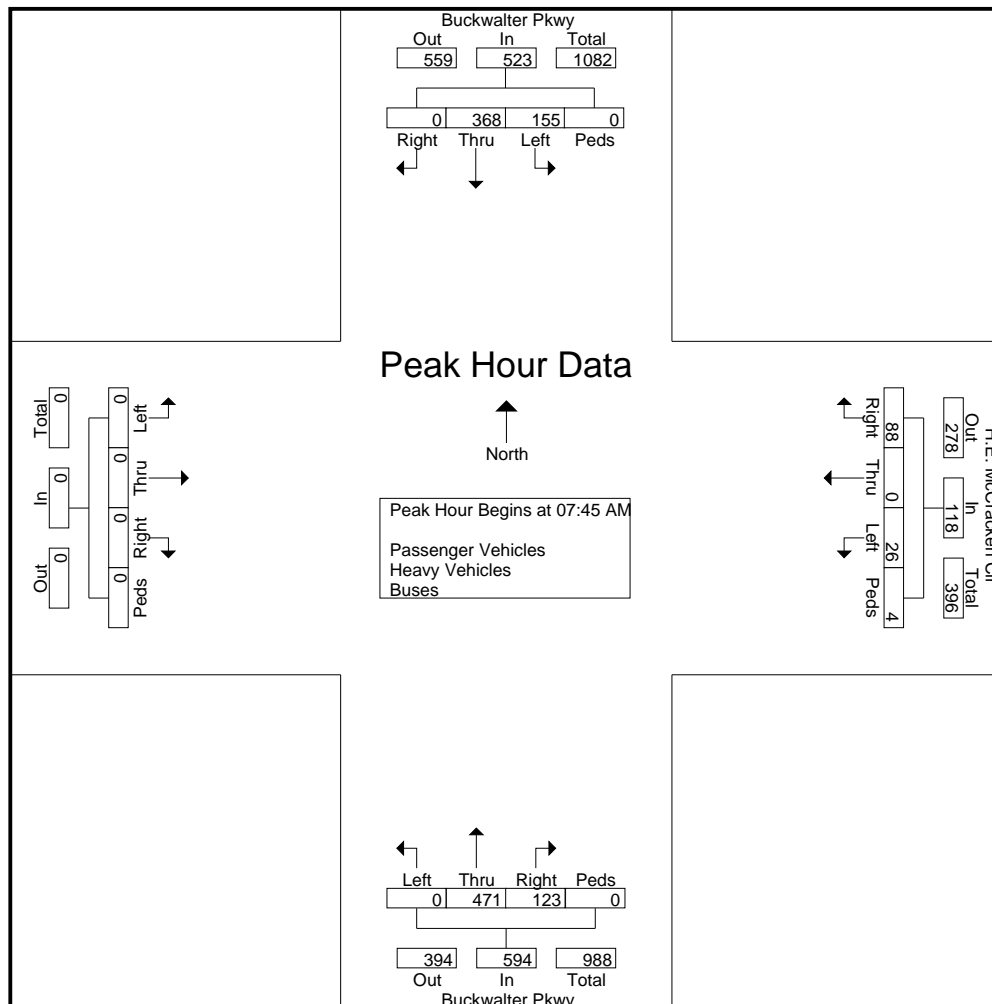


Short Counts

ATTACHMENT 4

File Name : Buckwalter Pkwy @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 3

	Buckwalter Pkwy From North					H.E. McCracken Cir From East					Buckwalter Pkwy From South					From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	23	72	0	0	95	1	0	22	2	25	0	136	7	0	143	0	0	0	0	0	263
08:00 AM	41	104	0	0	145	4	0	13	1	18	0	100	22	0	122	0	0	0	0	0	285
08:15 AM	53	109	0	0	162	4	0	19	1	24	0	111	41	0	152	0	0	0	0	0	338
08:30 AM	38	83	0	0	121	17	0	34	0	51	0	124	53	0	177	0	0	0	0	0	349
Total Volume	155	368	0	0	523	26	0	88	4	118	0	471	123	0	594	0	0	0	0	0	1235
% App. Total	29.6	70.4	0	0		22	0	74.6	3.4		0	79.3	20.7	0		0	0	0	0		
PHF	.731	.844	.000	.000	.807	.382	.000	.647	.500	.578	.000	.866	.580	.000	.839	.000	.000	.000	.000	.000	.885

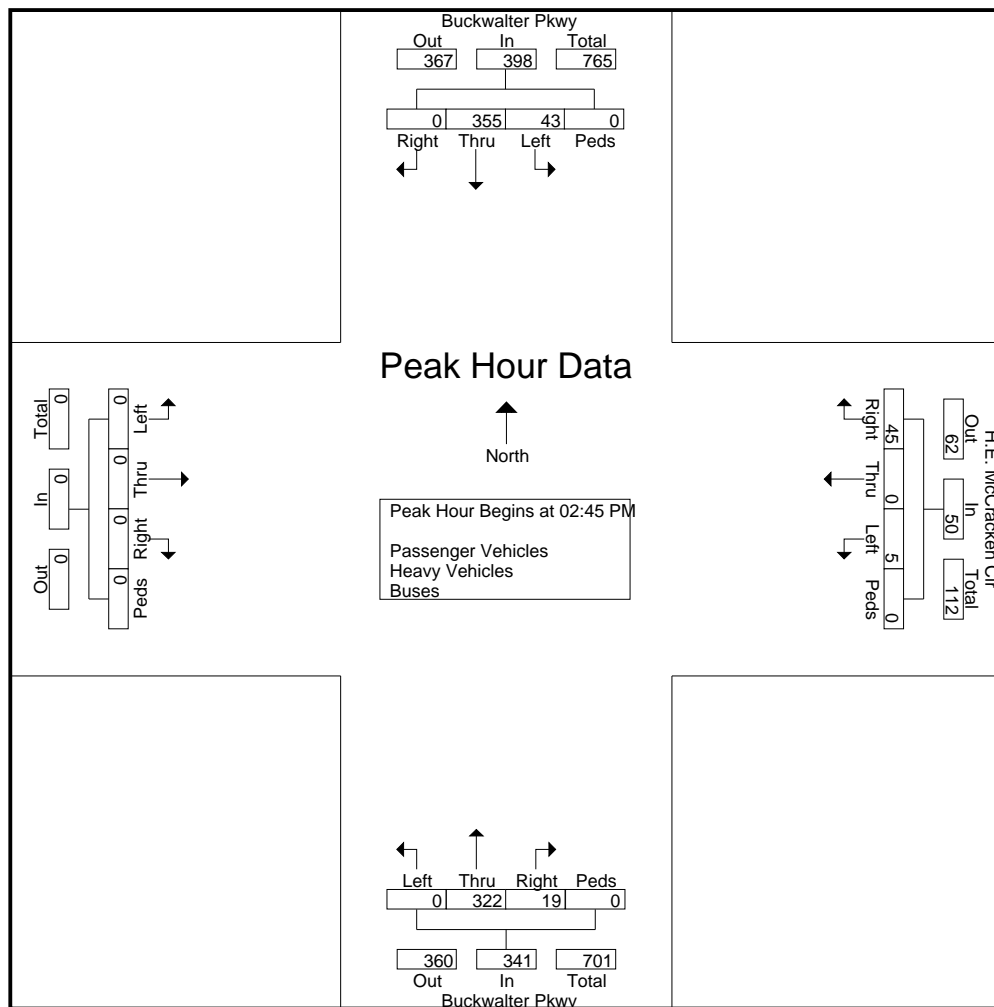


Short Counts

ATTACHMENT 4

File Name : Buckwalter Pkwy @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 4

	Buckwalter Pkwy From North					H.E. McCracken Cir From East					Buckwalter Pkwy From South					From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	7	95	0	0	102	0	0	19	0	19	0	95	3	0	98	0	0	0	0	0	219
03:00 PM	6	72	0	0	78	1	0	7	0	8	0	73	3	0	76	0	0	0	0	0	162
03:15 PM	10	85	0	0	95	0	0	8	0	8	0	81	3	0	84	0	0	0	0	0	187
03:30 PM	20	103	0	0	123	4	0	11	0	15	0	73	10	0	83	0	0	0	0	0	221
Total Volume	43	355	0	0	398	5	0	45	0	50	0	322	19	0	341	0	0	0	0	0	789
% App. Total	10.8	89.2	0	0		10	0	90	0		0	94.4	5.6	0		0	0	0	0		
PHF	.538	.862	.000	.000	.809	.313	.000	.592	.000	.658	.000	.847	.475	.000	.870	.000	.000	.000	.000	.000	.893



Short Counts

ATTACHMENT 4

File Name : Hampton Hall-Bluffton Pkwy @ Buckwalter Pkwy
 Site Code :
 Start Date : 2/14/2018
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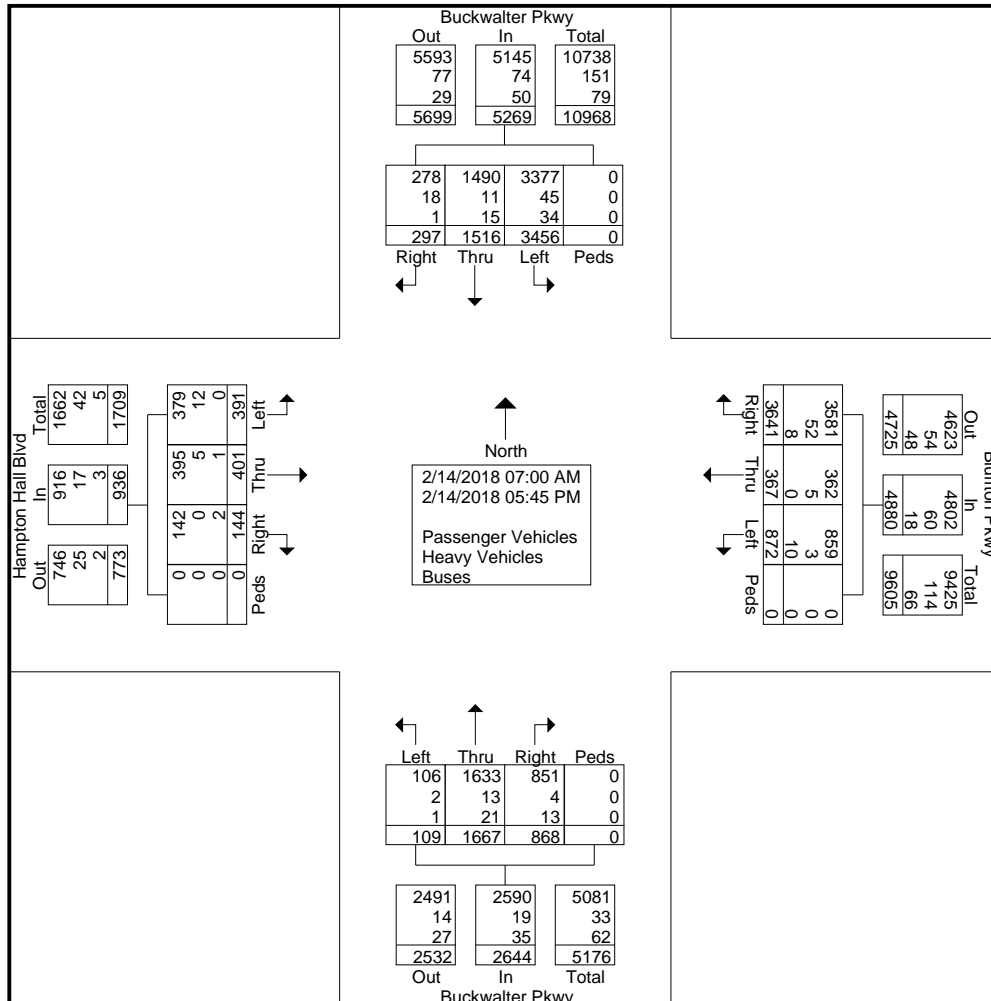
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Buckwalter Pkwy From North				Bluffton Pkwy From East				Buckwalter Pkwy From South				Hampton Hall Blvd From West				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	154	37	10	0	17	3	55	0	4	54	37	0	9	12	5	0	397
07:15 AM	155	59	9	0	14	0	87	0	3	69	33	0	10	9	7	0	455
07:30 AM	163	64	14	0	17	9	92	0	0	98	55	0	9	14	10	0	545
07:45 AM	190	64	13	0	22	5	119	0	4	98	61	0	20	15	4	0	615
Total	662	224	46	0	70	17	353	0	11	319	186	0	48	50	26	0	2012
08:00 AM	160	100	15	0	26	4	115	0	6	72	24	0	20	23	11	0	576
08:15 AM	182	125	21	0	24	10	82	0	6	65	39	0	21	18	13	0	606
08:30 AM	155	70	15	0	38	10	87	0	13	98	47	0	22	18	8	0	581
08:45 AM	166	50	16	0	28	14	97	0	7	60	55	0	13	16	2	0	524
Total	663	345	67	0	116	38	381	0	32	295	165	0	76	75	34	0	2287
02:00 PM	99	36	10	0	26	15	143	0	0	42	15	0	13	11	8	0	418
02:15 PM	106	52	11	0	31	13	133	0	4	53	22	0	16	14	3	0	458
02:30 PM	119	66	16	0	40	19	154	0	3	29	31	0	15	12	7	0	511
02:45 PM	102	52	14	0	36	19	169	0	9	60	33	0	16	9	4	0	523
Total	426	206	51	0	133	66	599	0	16	184	101	0	60	46	22	0	1910
03:00 PM	107	41	27	0	32	28	153	0	5	52	26	0	25	30	6	0	532
03:15 PM	114	51	14	0	30	29	144	0	3	63	26	0	12	17	5	0	508
03:30 PM	106	57	17	0	42	18	172	0	3	51	28	0	22	18	10	0	544
03:45 PM	129	61	26	0	28	18	166	0	8	110	41	0	15	26	5	0	633
Total	456	210	84	0	132	93	635	0	19	276	121	0	74	91	26	0	2217
04:00 PM	165	52	14	0	47	27	183	0	7	105	43	0	22	19	6	0	690
04:15 PM	149	65	8	0	46	15	194	0	7	67	33	0	18	21	6	0	629
04:30 PM	151	41	2	0	50	25	197	0	2	72	42	0	11	9	4	0	606
04:45 PM	141	54	1	0	43	19	184	0	1	75	39	0	15	17	3	0	592
Total	606	212	25	0	186	86	758	0	17	319	157	0	66	66	19	0	2517
05:00 PM	170	75	0	0	54	16	228	0	3	69	40	0	21	16	3	0	695
05:15 PM	162	87	3	0	74	15	229	0	5	73	27	0	19	17	8	0	719
05:30 PM	149	84	11	0	55	19	231	0	3	71	37	0	12	26	4	0	702
05:45 PM	162	73	10	0	52	17	227	0	3	61	34	0	15	14	2	0	670
Total	643	319	24	0	235	67	915	0	14	274	138	0	67	73	17	0	2786
Grand Total	3456	1516	297	0	872	367	3641	0	109	1667	868	0	391	401	144	0	13729
Apprch %	65.6	28.8	5.6	0	17.9	7.5	74.6	0	4.1	63	32.8	0	41.8	42.8	15.4	0	
Total %	25.2	11	2.2	0	6.4	2.7	26.5	0	0.8	12.1	6.3	0	2.8	2.9	1	0	
Passenger Vehicles	3377	1490	278	0	859	362	3581	0	106	1633	851	0	379	395	142	0	13453
% Passenger Vehicles	97.7	98.3	93.6	0	98.5	98.6	98.4	0	97.2	98	98	0	96.9	98.5	98.6	0	98
Heavy Vehicles	45	11	18	0	3	5	52	0	2	13	4	0	12	5	0	0	170
% Heavy Vehicles	1.3	0.7	6.1	0	0.3	1.4	1.4	0	1.8	0.8	0.5	0	3.1	1.2	0	0	1.2
Buses	34	15	1	0	10	0	8	0	1	21	13	0	0	1	2	0	106
% Buses	1	1	0.3	0	1.1	0	0.2	0	0.9	1.3	1.5	0	0	0.2	1.4	0	0.8

Short Counts

ATTACHMENT 4

File Name : Hampton Hall-Bluffton Pkwy @ Buckwalter Pkwy
 Site Code :
 Start Date : 2/14/2018
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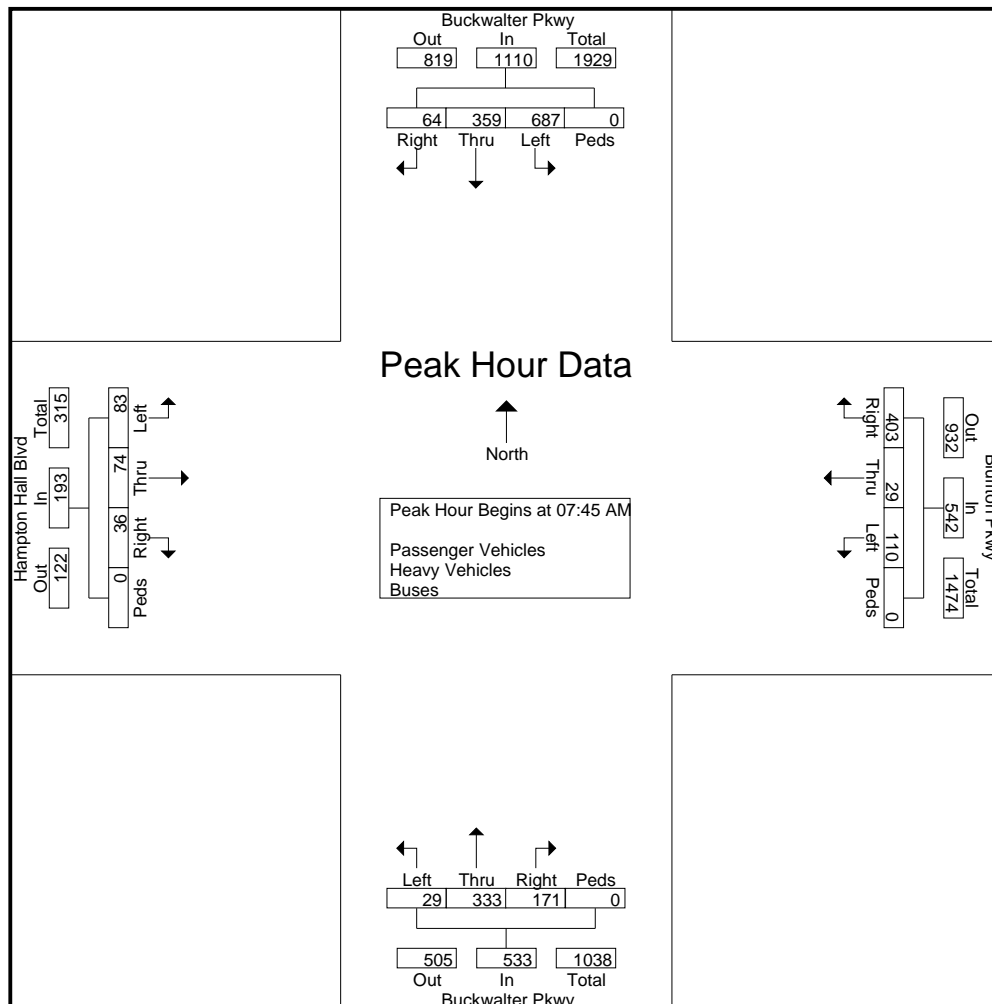


Short Counts

ATTACHMENT 4

File Name : Hampton Hall-Bluffton Pkwy @ Buckwalter Pkwy
 Site Code :
 Start Date : 2/14/2018
 Page No : 3

	Buckwalter Pkwy From North					Bluffton Pkwy From East					Buckwalter Pkwy From South					Hampton Hall Blvd From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	190	64	13	0	267	22	5	119	0	146	4	98	61	0	163	20	15	4	0	39	615
08:00 AM	160	100	15	0	275	26	4	115	0	145	6	72	24	0	102	20	23	11	0	54	576
08:15 AM	182	125	21	0	328	24	10	82	0	116	6	65	39	0	110	21	18	13	0	52	606
08:30 AM	155	70	15	0	240	38	10	87	0	135	13	98	47	0	158	22	18	8	0	48	581
Total Volume	687	359	64	0	1110	110	29	403	0	542	29	333	171	0	533	83	74	36	0	193	2378
% App. Total	61.9	32.3	5.8	0		20.3	5.4	74.4	0		5.4	62.5	32.1	0		43	38.3	18.7	0		
PHF	.904	.718	.762	.000	.846	.724	.725	.847	.000	.928	.558	.849	.701	.000	.817	.943	.804	.692	.000	.894	.967

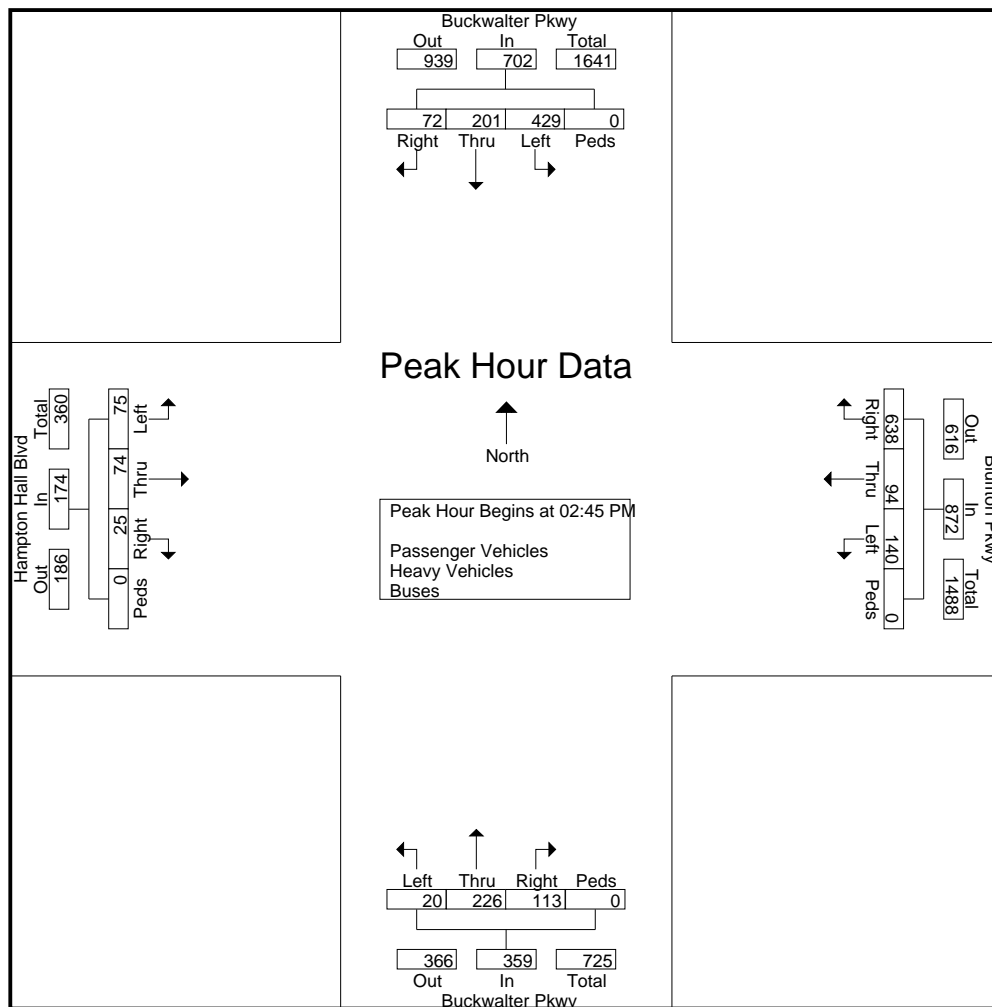


Short Counts

ATTACHMENT 4

File Name : Hampton Hall-Bluffton Pkwy @ Buckwalter Pkwy
 Site Code :
 Start Date : 2/14/2018
 Page No : 4

	Buckwalter Pkwy From North					Bluffton Pkwy From East					Buckwalter Pkwy From South					Hampton Hall Blvd From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	102	52	14	0	168	36	19	169	0	224	9	60	33	0	102	16	9	4	0	29	523
03:00 PM	107	41	27	0	175	32	28	153	0	213	5	52	26	0	83	25	30	6	0	61	532
03:15 PM	114	51	14	0	179	30	29	144	0	203	3	63	26	0	92	12	17	5	0	34	508
03:30 PM	106	57	17	0	180	42	18	172	0	232	3	51	28	0	82	22	18	10	0	50	544
Total Volume	429	201	72	0	702	140	94	638	0	872	20	226	113	0	359	75	74	25	0	174	2107
% App. Total	61.1	28.6	10.3	0		16.1	10.8	73.2	0		5.6	63	31.5	0		43.1	42.5	14.4	0		
PHF	.941	.882	.667	.000	.975	.833	.810	.927	.000	.940	.556	.897	.856	.000	.880	.750	.617	.625	.000	.713	.968



Short Counts

ATTACHMENT 4

File Name : Masters Way @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 1

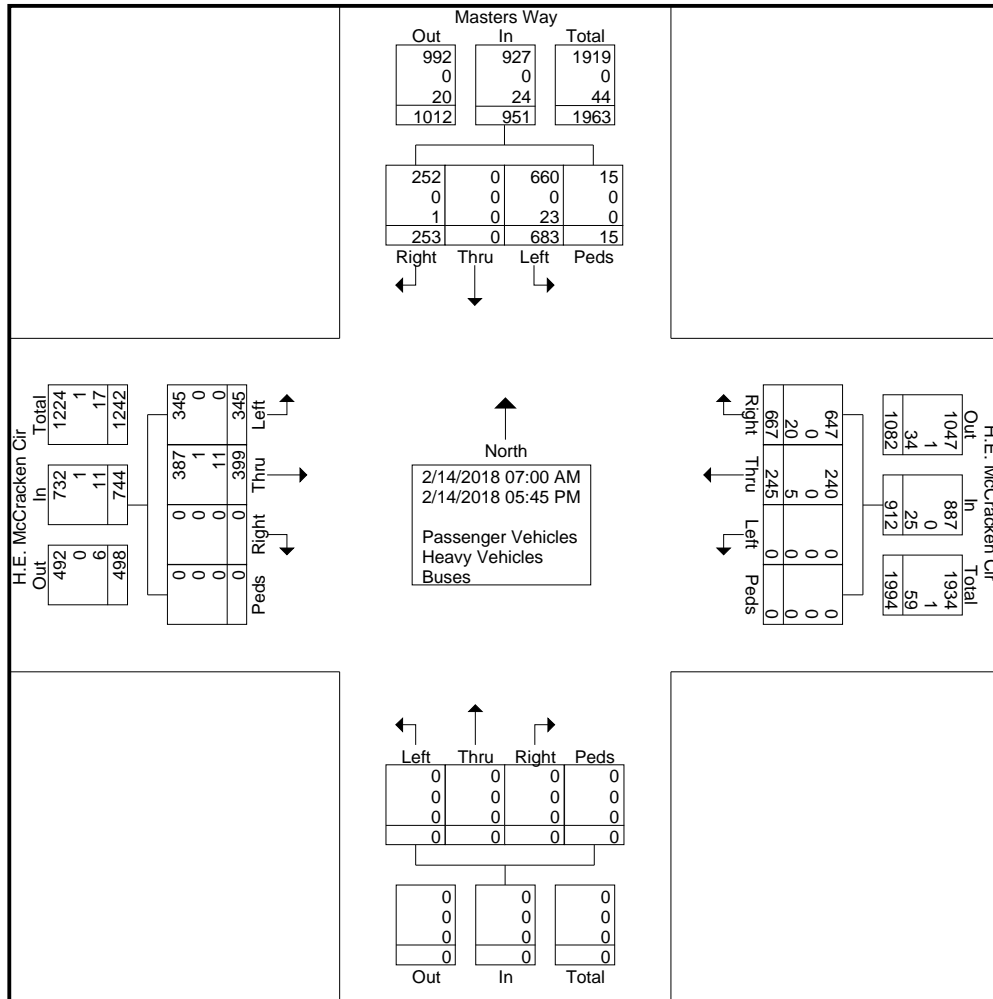
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Masters Way From North				H.E. McCracken Cir From East				From South				H.E. McCracken Cir From West				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00 AM	22	0	12	0	0	1	11	0	0	0	0	0	11	14	0	0	71
07:15 AM	51	0	2	0	0	12	42	0	0	0	0	0	6	16	0	0	129
07:30 AM	53	0	4	0	0	21	57	0	0	0	0	0	2	26	0	0	163
07:45 AM	19	0	17	0	0	17	42	0	0	0	0	0	14	10	0	0	119
Total	145	0	35	0	0	51	152	0	0	0	0	0	33	66	0	0	482
08:00 AM	35	0	25	1	0	7	30	0	0	0	0	0	21	24	0	0	143
08:15 AM	51	0	40	0	0	12	40	0	0	0	0	0	51	52	0	0	246
08:30 AM	43	0	32	0	0	8	32	0	0	0	0	0	71	73	0	0	259
08:45 AM	4	0	10	0	0	5	14	0	0	0	0	0	8	3	0	0	44
Total	133	0	107	1	0	32	116	0	0	0	0	0	151	152	0	0	692
02:00 PM	9	0	3	0	0	1	9	0	0	0	0	0	2	2	0	0	26
02:15 PM	33	0	2	0	0	4	16	0	0	0	0	0	5	8	0	0	68
02:30 PM	45	0	1	1	0	10	14	0	0	0	0	0	4	13	0	0	88
02:45 PM	8	0	2	0	0	19	46	0	0	0	0	0	3	7	0	0	85
Total	95	0	8	1	0	34	85	0	0	0	0	0	14	30	0	0	267
03:00 PM	15	0	2	0	0	4	22	0	0	0	0	0	2	6	0	0	51
03:15 PM	14	0	9	0	0	4	14	0	0	0	0	0	4	9	0	0	54
03:30 PM	26	0	6	0	0	8	16	0	0	0	0	0	2	5	0	0	63
03:45 PM	38	0	23	4	0	30	86	0	0	0	0	0	47	35	0	0	263
Total	93	0	40	4	0	46	138	0	0	0	0	0	55	55	0	0	431
04:00 PM	22	0	20	0	0	7	33	0	0	0	0	0	24	17	0	0	123
04:15 PM	20	0	7	1	0	13	27	0	0	0	0	0	20	17	0	0	105
04:30 PM	16	0	3	4	0	7	8	0	0	0	0	0	7	8	0	0	53
04:45 PM	21	0	4	0	0	7	10	0	0	0	0	0	6	7	0	0	55
Total	79	0	34	5	0	34	78	0	0	0	0	0	57	49	0	0	336
05:00 PM	29	0	6	3	0	11	23	0	0	0	0	0	10	10	0	0	92
05:15 PM	49	0	8	0	0	13	20	0	0	0	0	0	10	14	0	0	114
05:30 PM	24	0	6	1	0	14	33	0	0	0	0	0	8	10	0	0	96
05:45 PM	36	0	9	0	0	10	22	0	0	0	0	0	7	13	0	0	97
Total	138	0	29	4	0	48	98	0	0	0	0	0	35	47	0	0	399
Grand Total	683	0	253	15	0	245	667	0	0	0	0	0	345	399	0	0	2607
Apprch %	71.8	0	26.6	1.6	0	26.9	73.1	0	0	0	0	0	46.4	53.6	0	0	
Total %	26.2	0	9.7	0.6	0	9.4	25.6	0	0	0	0	0	13.2	15.3	0	0	
Passenger Vehicles	660	0	252	15	0	240	647	0	0	0	0	0	345	387	0	0	2546
% Passenger Vehicles	96.6	0	99.6	100	0	98	97	0	0	0	0	0	100	97	0	0	97.7
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0
Buses	23	0	1	0	0	5	20	0	0	0	0	0	0	11	0	0	60
% Buses	3.4	0	0.4	0	0	2	3	0	0	0	0	0	0	2.8	0	0	2.3

Short Counts

ATTACHMENT 4

File Name : Masters Way @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 2

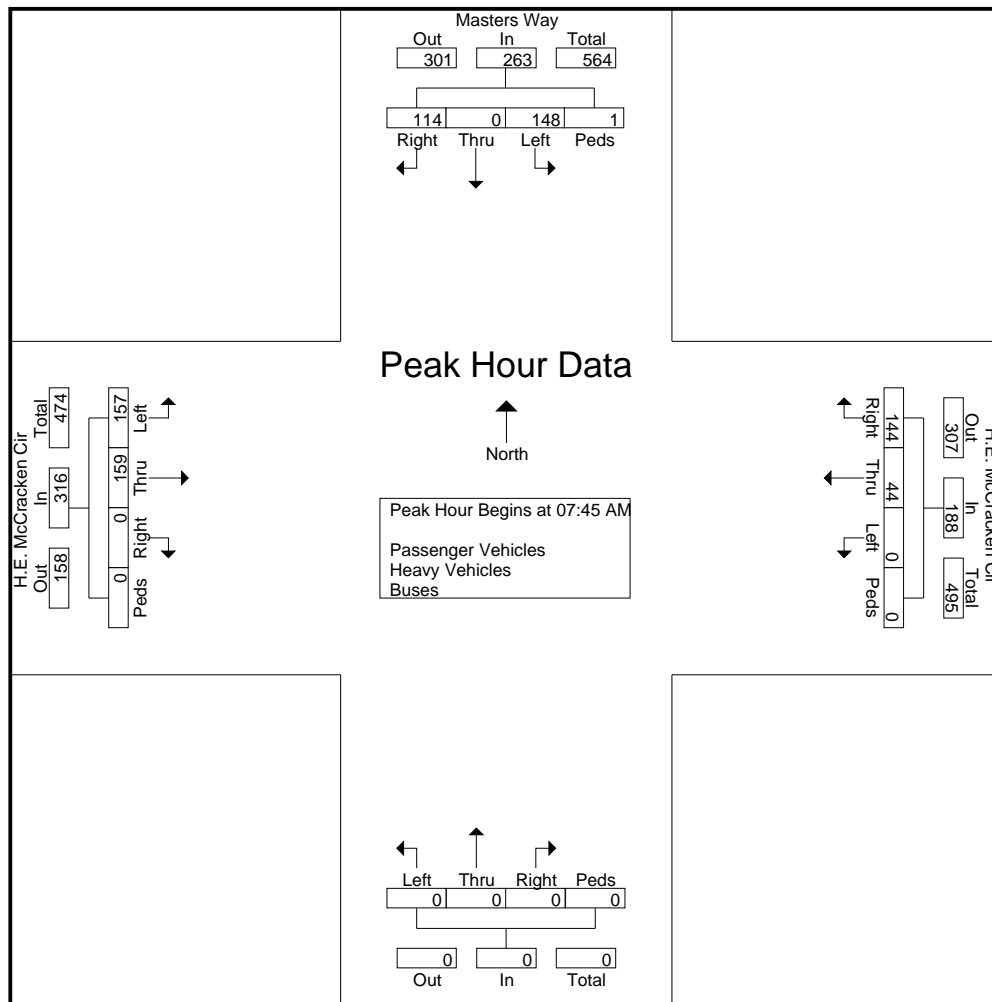


Short Counts

ATTACHMENT 4

File Name : Masters Way @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 3

	Masters Way From North					H.E. McCracken Cir From East					From South					H.E. McCracken Cir From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	19	0	17	0	36	0	17	42	0	59	0	0	0	0	0	14	10	0	0	24	119
08:00 AM	35	0	25	1	61	0	7	30	0	37	0	0	0	0	0	21	24	0	0	45	143
08:15 AM	51	0	40	0	91	0	12	40	0	52	0	0	0	0	0	51	52	0	0	103	246
08:30 AM	43	0	32	0	75	0	8	32	0	40	0	0	0	0	0	71	73	0	0	144	259
Total Volume	148	0	114	1	263	0	44	144	0	188	0	0	0	0	0	157	159	0	0	316	767
% App. Total	56.3	0	43.3	0.4		0	23.4	76.6	0		0	0	0	0		49.7	50.3	0	0		
PHF	.725	.000	.713	.250	.723	.000	.647	.857	.000	.797	.000	.000	.000	.000	.000	.553	.545	.000	.000	.549	.740

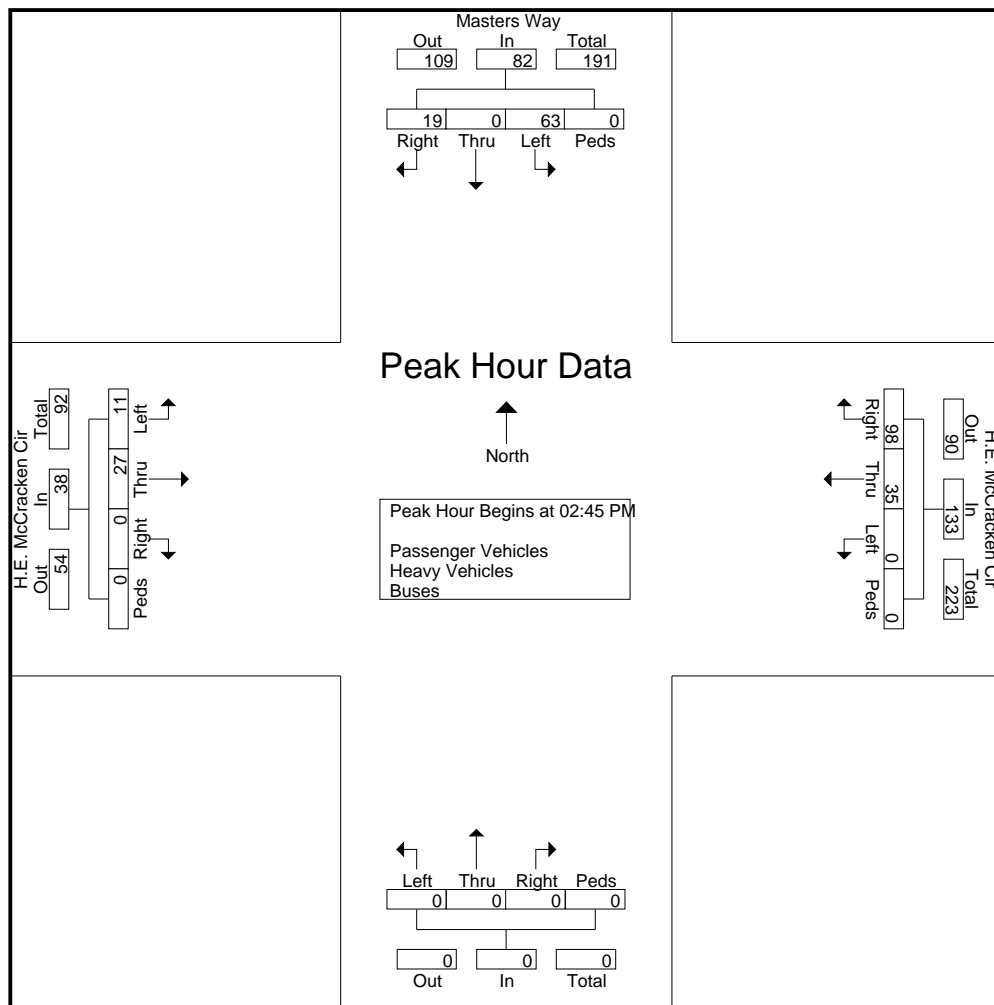


Short Counts

ATTACHMENT 4

File Name : Masters Way @ H.E. McCracken Cir
 Site Code :
 Start Date : 2/14/2018
 Page No : 4

	Masters Way From North					H.E. McCracken Cir From East					From South					H.E. McCracken Cir From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	8	0	2	0	10	0	19	46	0	65	0	0	0	0	0	3	7	0	0	10	85
03:00 PM	15	0	2	0	17	0	4	22	0	26	0	0	0	0	0	2	6	0	0	8	51
03:15 PM	14	0	9	0	23	0	4	14	0	18	0	0	0	0	0	4	9	0	0	13	54
03:30 PM	26	0	6	0	32	0	8	16	0	24	0	0	0	0	0	2	5	0	0	7	63
Total Volume	63	0	19	0	82	0	35	98	0	133	0	0	0	0	0	11	27	0	0	38	253
% App. Total	76.8	0	23.2	0		0	26.3	73.7	0		0	0	0	0	0	28.9	71.1	0	0		
PHF	.606	.000	.528	.000	.641	.000	.461	.533	.000	.512	.000	.000	.000	.000	.000	.688	.750	.000	.000	.731	.744



ATTACHMENT 4

File Name : gardner dr @ hh christian academy
Site Code : 33333333
Start Date : 2/14/2018
Page No : 1

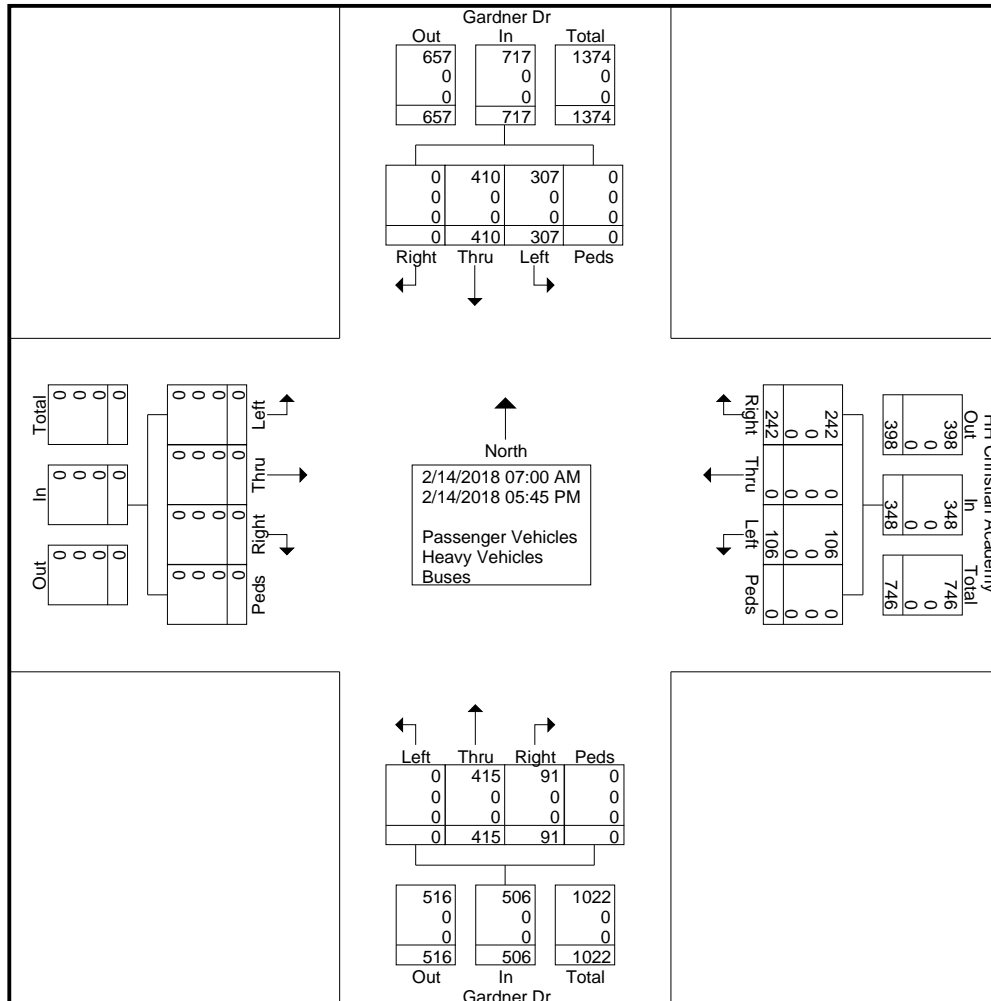
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Gardner Dr From North				HH Christian Academy From East				Gardner Dr From South				From West					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total	
07:00 AM	10	16	0	0	1	0	2	0	0	17	3	0	0	0	0	0	0	49
07:15 AM	28	32	0	0	2	0	6	0	0	25	5	0	0	0	0	0	0	98
07:30 AM	57	6	0	0	1	0	23	0	0	30	9	0	0	0	0	0	0	126
07:45 AM	80	15	0	0	7	0	41	0	0	27	22	0	0	0	0	0	0	192
Total	175	69	0	0	11	0	72	0	0	99	39	0	0	0	0	0	0	465
08:00 AM	4	9	0	0	2	0	3	0	0	11	5	0	0	0	0	0	0	34
08:15 AM	1	9	0	0	1	0	4	0	0	23	0	0	0	0	0	0	0	38
08:30 AM	1	14	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	33
08:45 AM	0	12	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	28
Total	6	44	0	0	3	0	7	0	0	68	5	0	0	0	0	0	0	133
02:00 PM	2	3	0	0	1	0	2	0	0	6	0	0	0	0	0	0	0	14
02:15 PM	3	3	0	0	0	0	1	0	0	7	1	0	0	0	0	0	0	15
02:30 PM	13	23	0	0	1	0	1	0	0	19	6	0	0	0	0	0	0	63
02:45 PM	28	13	0	0	9	0	15	0	0	28	5	0	0	0	0	0	0	98
Total	46	42	0	0	11	0	19	0	0	60	12	0	0	0	0	0	0	190
03:00 PM	16	30	0	0	21	0	47	0	0	19	6	0	0	0	0	0	0	139
03:15 PM	10	18	0	0	4	0	24	0	0	16	3	0	0	0	0	0	0	75
03:30 PM	5	26	0	0	8	0	11	0	0	14	3	0	0	0	0	0	0	67
03:45 PM	6	20	0	0	6	0	9	0	0	22	2	0	0	0	0	0	0	65
Total	37	94	0	0	39	0	91	0	0	71	14	0	0	0	0	0	0	346
04:00 PM	6	30	0	0	7	0	6	0	0	18	1	0	0	0	0	0	0	68
04:15 PM	3	14	0	0	3	0	4	0	0	24	2	0	0	0	0	0	0	50
04:30 PM	5	16	0	0	8	0	10	0	0	10	1	0	0	0	0	0	0	50
04:45 PM	5	16	0	0	5	0	7	0	0	12	1	0	0	0	0	0	0	46
Total	19	76	0	0	23	0	27	0	0	64	5	0	0	0	0	0	0	214
05:00 PM	12	19	0	0	7	0	9	0	0	14	3	0	0	0	0	0	0	64
05:15 PM	5	23	0	0	5	0	11	0	0	15	6	0	0	0	0	0	0	65
05:30 PM	4	26	0	0	4	0	2	0	0	10	4	0	0	0	0	0	0	50
05:45 PM	3	17	0	0	3	0	4	0	0	14	3	0	0	0	0	0	0	44
Total	24	85	0	0	19	0	26	0	0	53	16	0	0	0	0	0	0	223
Grand Total	307	410	0	0	106	0	242	0	0	415	91	0	0	0	0	0	0	1571
Apprch %	42.8	57.2	0	0	30.5	0	69.5	0	0	82	18	0	0	0	0	0	0	
Total %	19.5	26.1	0	0	6.7	0	15.4	0	0	26.4	5.8	0	0	0	0	0	0	
Passenger Vehicles	307	410	0	0	106	0	242	0	0	415	91	0	0	0	0	0	0	1571
% Passenger Vehicles	100	100	0	0	100	0	100	0	0	100	100	0	0	0	0	0	0	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Short Counts

ATTACHMENT 4

File Name : gardner dr @ hh christian academy
 Site Code : 33333333
 Start Date : 2/14/2018
 Page No : 2

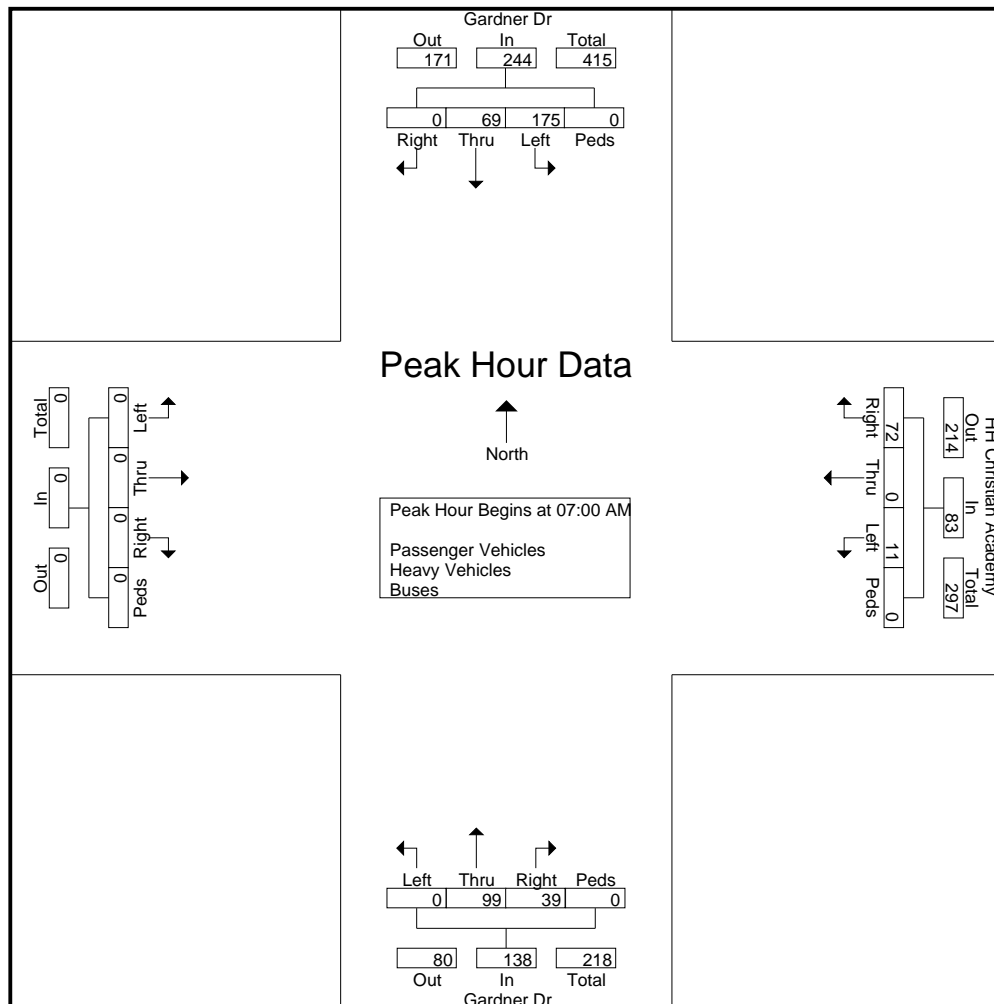


Short Counts

ATTACHMENT 4

File Name : gardner dr @ hh christian academy
 Site Code : 33333333
 Start Date : 2/14/2018
 Page No : 3

	Gardner Dr From North					HH Christian Academy From East					Gardner Dr From South					From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	10	16	0	0	26	1	0	2	0	3	0	17	3	0	20	0	0	0	0	0	49
07:15 AM	28	32	0	0	60	2	0	6	0	8	0	25	5	0	30	0	0	0	0	0	98
07:30 AM	57	6	0	0	63	1	0	23	0	24	0	30	9	0	39	0	0	0	0	0	126
07:45 AM	80	15	0	0	95	7	0	41	0	48	0	27	22	0	49	0	0	0	0	0	192
Total Volume	175	69	0	0	244	11	0	72	0	83	0	99	39	0	138	0	0	0	0	0	465
% App. Total	71.7	28.3	0	0		13.3	0	86.7	0		0	71.7	28.3	0		0	0	0	0		
PHF	.547	.539	.000	.000	.642	.393	.000	.439	.000	.432	.000	.825	.443	.000	.704	.000	.000	.000	.000	.000	.605

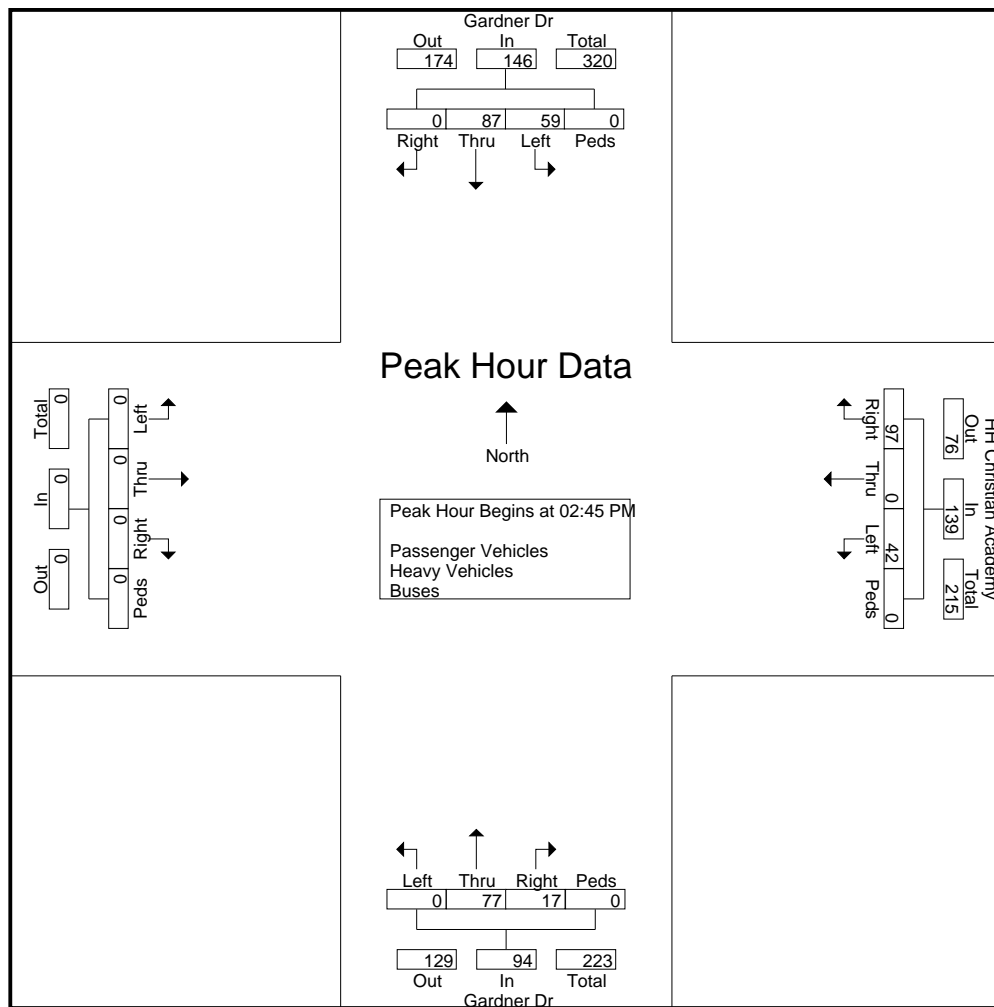


Short Counts

ATTACHMENT 4

File Name : gardner dr @ hh christian academy
 Site Code : 33333333
 Start Date : 2/14/2018
 Page No : 4

	Gardner Dr From North					HH Christian Academy From East					Gardner Dr From South					From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	28	13	0	0	41	9	0	15	0	24	0	28	5	0	33	0	0	0	0	0	98
03:00 PM	16	30	0	0	46	21	0	47	0	68	0	19	6	0	25	0	0	0	0	0	139
03:15 PM	10	18	0	0	28	4	0	24	0	28	0	16	3	0	19	0	0	0	0	0	75
03:30 PM	5	26	0	0	31	8	0	11	0	19	0	14	3	0	17	0	0	0	0	0	67
Total Volume	59	87	0	0	146	42	0	97	0	139	0	77	17	0	94	0	0	0	0	0	379
% App. Total	40.4	59.6	0	0		30.2	0	69.8	0		0	81.9	18.1	0		0	0	0	0	0	
PHF	.527	.725	.000	.000	.793	.500	.000	.516	.000	.511	.000	.688	.708	.000	.712	.000	.000	.000	.000	.000	.682



INTERSECTION VOLUME DEVELOPMENT

Buildout
Buckwalter Parkway at Bluffton Parkway/Hampton Hall Boulevard
AM PEAK HOUR

Description	Buckwalter Parkway Northbound			Buckwalter Parkway Southbound			Hampton Hall Boulevard Eastbound			Bluffton Parkway Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	29	333	171	687	359	64	83	74	36	110	29	403
Pedestrians	0			0			0			0		
Heavy Vehicle %	2.0%			2.4%			2.1%			1.6%		
Peak Hour Factor	0.82			0.85			0.89			0.93		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	41	473	243	977	510	91	118	105	51	156	41	573
New Project Trips												
Trip Distribution IN			7%	30%								
Trip Distribution OUT										7%		30%
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	32	139	0	0	0	0	0	13	0	53
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	32	139	0	0	0	0	0	13	0	53
2029 Buildout Total	41	473	275	1,116	510	91	118	105	51	169	41	626

PM PEAK HOUR

Description	Buckwalter Parkway Northbound			Buckwalter Parkway Southbound			Hampton Hall Boulevard Eastbound			Bluffton Parkway Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	20	226	113	429	201	72	75	74	25	140	94	638
Pedestrians	0			0			0			0		
Heavy Vehicle %	2.0%			2.4%			2.1%			1.6%		
Peak Hour Factor	0.88			0.98			0.71			0.94		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	28	321	161	610	286	102	107	105	36	199	134	907
New Project Trips												
Trip Distribution IN			7%	30%								
Trip Distribution OUT										7%		30%
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	11	48	0	0	0	0	0	21	0	90
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	11	48	0	0	0	0	0	21	0	90
2029 Buildout Total	28	321	172	658	286	102	107	105	36	220	134	997

INTERSECTION VOLUME DEVELOPMENT

Buildout
Bluffton Parkway at Site Driveway #1
AM PEAK HOUR

Description	Site Driveway #1 <u>Northbound</u>			- <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes							0	932	0	0	542	0
Pedestrians								0			0	
Heavy Vehicle %		2.0%						2.4%			1.6%	
Peak Hour Factor		0.75						0.85			0.93	
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	0	0	0	0	0	0	0	1,325	0	0	771	0
New Project Trips												
Trip Distribution IN								17%	20%	25%		
Trip Distribution OUT	20%		25%								17%	
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	36	0	45	0	0	0	0	78	93	115	30	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	36	0	45	0	0	0	0	78	93	115	30	0
2029 Buildout Total	36	0	45	0	0	0	0	1,403	93	115	801	0

PM PEAK HOUR

Description	Site Driveway #1 <u>Northbound</u>			- <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes							0	616	0	0	872	0
Pedestrians								0			0	
Heavy Vehicle %		2.0%						2.4%			1.6%	
Peak Hour Factor		0.75						0.98			0.94	
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	0	0	0	0	0	0	0	876	0	0	1,240	0
New Project Trips												
Trip Distribution IN								17%	20%	25%		
Trip Distribution OUT	20%		25%								17%	
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	60	0	76	0	0	0	0	28	31	41	51	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	60	0	76	0	0	0	0	28	31	41	51	0
2029 Buildout Total	60	0	76	0	0	0	0	904	31	41	1,291	0

INTERSECTION VOLUME DEVELOPMENT

Buildout
Bluffton Parkway at Masters Way/Crossings Boulevard
AM PEAK HOUR

	Masters Way Northbound			Crossings Boulevard Southbound			Bluffton Parkway Eastbound			Bluffton Parkway Westbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	0	311	20	5	36	11	937	6	280	516	7
Pedestrians	3			0			0			0		
Heavy Vehicle %	1.8%			1.9%			1.6%			1.6%		
Peak Hour Factor	0.80			0.80			0.86			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	0	0	347	22	6	40	16	1,332	9	398	734	10
Adjusted Due to New Lane Geometry	160	10	177									
New Project Trips												
Trip Distribution IN									17%	30%	25%	
Trip Distribution OUT	17%		30%					25%				
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	30	0	54	0	0	0	0	45	78	138	115	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	30	0	54	0	0	0	0	45	78	138	115	0
2029 Buildout Total	190	10	231	22	6	40	16	1,377	87	536	849	10

PM PEAK HOUR

	Masters Way Northbound			Crossings Boulevard Southbound			Bluffton Parkway Eastbound			Bluffton Parkway Westbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	0	118	20	7	20	17	589	4	100	869	30
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.9%			1.6%			1.6%		
Peak Hour Factor	0.59			0.73			0.90			0.84		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.422	1.422	1.422	1.422	1.422	1.422
2029 Background Traffic	0	0	132	22	8	22	24	837	6	142	1,235	43
Adjusted Due to New Lane Geometry	61	4	67									
New Project Trips												
Trip Distribution IN									17%	30%	25%	
Trip Distribution OUT	17%		30%					25%				
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	51	0	91	0	0	0	0	76	28	49	41	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	51	0	91	0	0	0	0	76	28	49	41	0
2029 Buildout Total	112	4	158	22	8	22	24	913	34	191	1,276	43

INTERSECTION VOLUME DEVELOPMENT

Buildout
Buckwalter Parkway at H.E. McCracken Circle
AM PEAK HOUR

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			- <u>Eastbound</u>			H.E. McCracken Circle <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	471	123	155	368	0				26	0	88
Pedestrians	0			0						4		
Heavy Vehicle %	2.0%			2.2%						1.3%		
Peak Hour Factor	0.84			0.81						0.58		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	1.0%	1.0%	1.0%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.116	1.116	1.116
2029 Background Traffic	0	670	175	220	523	0	0	0	0	29	0	98
New Project Trips												
Trip Distribution IN		7%	8%									
Trip Distribution OUT					7%					8%		
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	32	37	0	13	0	0	0	0	14	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	32	37	0	13	0	0	0	0	14	0	0
2029 Buildout Total	0	702	212	220	536	0	0	0	0	43	0	98

PM PEAK HOUR

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			- <u>Eastbound</u>			H.E. McCracken Circle <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	322	19	43	355	0				5	0	45
Pedestrians	0			0						0		
Heavy Vehicle %	2.0%			2.2%			0.0%			1.3%		
Peak Hour Factor	0.87			0.81						0.66		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	1.0%	1.0%	1.0%
Growth Factor	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.422	1.116	1.116	1.116
2029 Background Traffic	0	458	27	61	505	0	0	0	0	6	0	50
New Project Trips												
Trip Distribution IN		7%	8%									
Trip Distribution OUT					7%					8%		
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	11	13	0	21	0	0	0	0	24	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	11	13	0	21	0	0	0	0	24	0	0
2029 Buildout Total	0	469	40	61	526	0	0	0	0	30	0	50

INTERSECTION VOLUME DEVELOPMENT

Buildout
Masters Way at Site Driveway #2/Pinecrest Way
AM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #2 Eastbound			Pinecrest Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	311	5	5	291	0	0	0	0	5	0	5
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.6%			2.0%			2.0%		
Peak Hour Factor	0.80			0.90			0.75			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	347	6	6	325	0	0	0	0	6	0	6
New Project Trips												
Trip Distribution IN	1%				38%	9%						
Trip Distribution OUT		38%					9%		1%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	5	68	0	0	175	41	16	0	2	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	5	68	0	0	175	41	16	0	2	0	0	0
2029 Buildout Total	5	415	6	6	500	41	16	0	2	6	0	6

PM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #2 Eastbound			Pinecrest Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	118	5	5	111	0	0	0	0	5	0	5
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.6%			2.0%			2.0%		
Peak Hour Factor	0.59			0.84			0.75			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	132	6	6	124	0	0	0	0	6	0	6
New Project Trips												
Trip Distribution IN	1%				38%	9%						
Trip Distribution OUT		38%					9%		1%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	2	115	0	0	62	15	27	0	3	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	2	115	0	0	62	15	27	0	3	0	0	0
2029 Buildout Total	2	247	6	6	186	15	27	0	3	6	0	6

INTERSECTION VOLUME DEVELOPMENT**Buildout
Masters Way at Site Driveway #3
AM PEAK HOUR**

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #3 Eastbound			- Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	311	0	0	291	0	0	0	0			
Pedestrians	0			0			0					
Heavy Vehicle %	1.8%			1.6%			2.0%					
Peak Hour Factor	0.80			0.90			0.75					
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	347	0	0	325	0	0	0	0	0	0	0
New Project Trips												
Trip Distribution IN	7%	1%				38%						
Trip Distribution OUT					1%		38%		7%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	32	5	0	0	2	175	68	0	12	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	32	5	0	0	2	175	68	0	12	0	0	0
2029 Buildout Total	32	352	0	0	327	175	68	0	12	0	0	0

PM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #3 Eastbound			- Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	118	0	0	111	0	0	0	0			
Pedestrians	0			0			0					
Heavy Vehicle %	1.8%			1.6%			2.0%			0.0%		
Peak Hour Factor	0.59			0.84			0.75					
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	132	0	0	124	0	0	0	0	0	0	0
New Project Trips												
Trip Distribution IN	7%	1%				38%						
Trip Distribution OUT					1%		38%		7%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	11	2	0	0	3	62	115	0	21	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	11	2	0	0	3	62	115	0	21	0	0	0
2029 Buildout Total	11	134	0	0	127	62	115	0	21	0	0	0

INTERSECTION VOLUME DEVELOPMENT

Buildout
Masters Way at H.E. McCracken Circle
AM PEAK HOUR

Description	- Northbound			Masters Way Southbound			H.E. McCracken Circle Eastbound			H.E. McCracken Circle Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes				148	0	114	157	159	0	0	44	144
Pedestrians				1			0			0		
Heavy Vehicle %				2.6%			1.6%			2.7%		
Peak Hour Factor				0.72			0.55			0.80		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	0	0	165	0	127	175	177	0	0	49	161
New Project Trips												
Trip Distribution IN							8%					
Trip Distribution OUT						8%						
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	0	0	0	14	37	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	0	0	0	14	37	0	0	0	0	0
2029 Buildout Total	0	0	0	165	0	141	212	177	0	0	49	161

PM PEAK HOUR

Description	- Northbound			Masters Way Southbound			H.E. McCracken Circle Eastbound			H.E. McCracken Circle Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes				63	0	19	11	27	0	0	35	98
Pedestrians				0			0			0		
Heavy Vehicle %		0.0%		2.6%			1.6%			2.7%		
Peak Hour Factor				0.64			0.73			0.51		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
2029 Background Traffic	0	0	0	70	0	21	12	30	0	0	39	109
New Project Trips												
Trip Distribution IN							8%					
Trip Distribution OUT						8%						
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	0	0	0	24	13	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	0	0	0	24	13	0	0	0	0	0
2029 Buildout Total	0	0	0	70	0	45	25	30	0	0	39	109

INTERSECTION VOLUME DEVELOPMENT**Phase 1****Buckwalter Parkway at Bluffton Parkway/Hampton Hall Boulevard
AM PEAK HOUR**

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			Hampton Hall Boulevard <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	29	333	171	687	359	64	83	74	36	110	29	403
Pedestrians	0			0			0			0		
Heavy Vehicle %	2.0%			2.4%			2.1%			1.6%		
Peak Hour Factor	0.82			0.85			0.89			0.93		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	31	355	182	732	383	68	88	79	38	117	31	430
New Project Trips												
Trip Distribution IN			7%	30%								
Trip Distribution OUT										7%		30%
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	21	92	0	0	0	0	0	8	0	36
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	21	92	0	0	0	0	0	8	0	36
2020 Buildout Total	31	355	203	824	383	68	88	79	38	125	31	466

PM PEAK HOUR

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			Hampton Hall Boulevard <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	20	226	113	429	201	72	75	74	25	140	94	638
Pedestrians	0			0			0			0		
Heavy Vehicle %	2.0%			2.4%			2.1%			1.6%		
Peak Hour Factor	0.88			0.98			0.71			0.94		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	21	241	120	457	214	77	80	79	27	149	100	680
New Project Trips												
Trip Distribution IN			7%	30%								
Trip Distribution OUT										7%		30%
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	7	32	0	0	0	0	0	14	0	60
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	7	32	0	0	0	0	0	14	0	60
2020 Buildout Total	21	241	127	489	214	77	80	79	27	163	100	740

INTERSECTION VOLUME DEVELOPMENT**Phase 1****Bluffton Parkway at Site Driveway #1
AM PEAK HOUR**

Description	Site Driveway #1 <u>Northbound</u>			- <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes							0	932	0	0	542	0
Pedestrians							0			0		
Heavy Vehicle %	2.0%						2.4%			1.6%		
Peak Hour Factor	0.75						0.85			0.93		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	0	0	0	0	0	0	0	994	0	0	578	0
New Project Trips												
Trip Distribution IN								17%	20%	25%		
Trip Distribution OUT	20%		25%								17%	
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	24	0	30	0	0	0	0	52	61	76	20	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	24	0	30	0	0	0	0	52	61	76	20	0
2020 Buildout Total	24	0	30	0	0	0	0	1,046	61	76	598	0

PM PEAK HOUR

Description	Site Driveway #1 <u>Northbound</u>			- <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes							0	616	0	0	872	0
Pedestrians							0			0		
Heavy Vehicle %	2.0%						2.4%			1.6%		
Peak Hour Factor	0.75						0.98			0.94		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	0	0	0	0	0	0	0	657	0	0	930	0
New Project Trips												
Trip Distribution IN								17%	20%	25%		
Trip Distribution OUT	20%		25%								17%	
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	40	0	50	0	0	0	0	18	21	27	34	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	40	0	50	0	0	0	0	18	21	27	34	0
2020 Buildout Total	40	0	50	0	0	0	0	675	21	27	964	0

INTERSECTION VOLUME DEVELOPMENT**Phase 1****Bluffton Parkway at Masters Way/Crossings Boulevard
AM PEAK HOUR**

Description	Masters Way <u>Northbound</u>			Crossings Boulevard <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	0	311	20	5	36	11	937	6	280	516	7
Pedestrians	3			0			0			0		
Heavy Vehicle %	1.8%			1.9%			1.6%			1.6%		
Peak Hour Factor	0.80			0.80			0.86			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	0	0	317	20	5	37	12	999	6	298	550	7
<i>Adjusted Due to New Lane Geometry</i>	146	10	162									
New Project Trips												
Trip Distribution IN									17%	30%	25%	
Trip Distribution OUT	17%		30%					25%				
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	20	0	35	0	0	0	0	30	52	91	76	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	20	0	35	0	0	0	0	30	52	91	76	0
2020 Buildout Total	166	10	197	20	5	37	12	1,029	58	389	626	7

PM PEAK HOUR

Description	Masters Way <u>Northbound</u>			Crossings Boulevard <u>Southbound</u>			Bluffton Parkway <u>Eastbound</u>			Bluffton Parkway <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	0	118	20	7	20	17	589	4	100	869	30
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.9%			1.6%			1.6%		
Peak Hour Factor	0.59			0.73			0.90			0.84		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.066	1.066	1.066	1.066	1.066	1.066
2020 Background Traffic	0	0	120	20	7	20	18	628	4	107	926	32
<i>Adjusted Due to New Lane Geometry</i>	55	4	61									
New Project Trips												
Trip Distribution IN									17%	30%	25%	
Trip Distribution OUT	17%		30%					25%				
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	34	0	60	0	0	0	0	50	18	32	27	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	34	0	60	0	0	0	0	50	18	32	27	0
2020 Buildout Total	89	4	121	20	7	20	18	678	22	139	953	32

INTERSECTION VOLUME DEVELOPMENT**Phase 1****Buckwalter Parkway at H.E. McCracken Circle
AM PEAK HOUR**

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			- <u>Eastbound</u>			H.E. McCracken Circle <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	471	123	155	368	0				26	0	88
Pedestrians	0			0						4		
Heavy Vehicle %	2.0%			2.2%						1.3%		
Peak Hour Factor	0.84			0.81						0.58		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	1.0%	1.0%	1.0%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.020	1.020	1.020
2020 Background Traffic	0	502	131	165	392	0	0	0	0	27	0	90
New Project Trips												
Trip Distribution IN		7%	8%									
Trip Distribution OUT					7%					8%		
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	21	24	0	8	0	0	0	0	9	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	21	24	0	8	0	0	0	0	9	0	0
2020 Buildout Total	0	523	155	165	400	0	0	0	0	36	0	90

PM PEAK HOUR

Description	Buckwalter Parkway <u>Northbound</u>			Buckwalter Parkway <u>Southbound</u>			- <u>Eastbound</u>			H.E. McCracken Circle <u>Westbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	322	19	43	355	0				5	0	45
Pedestrians	0			0						0		
Heavy Vehicle %	2.0%			2.2%			0.0%			1.3%		
Peak Hour Factor	0.87			0.81						0.66		
Annual Growth Rate	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	1.0%	1.0%	1.0%
Growth Factor	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.020	1.020	1.020
2020 Background Traffic	0	343	20	46	378	0	0	0	0	5	0	46
New Project Trips												
Trip Distribution IN		7%	8%									
Trip Distribution OUT					7%					8%		
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	7	9	0	14	0	0	0	0	15	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	7	9	0	14	0	0	0	0	15	0	0
2020 Buildout Total	0	350	29	46	392	0	0	0	0	20	0	46

INTERSECTION VOLUME DEVELOPMENT**Phase 1****Masters Way at Site Driveway #2/Pinecrest Way
AM PEAK HOUR**

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #2 Eastbound			Pinecrest Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	311	5	5	291	0	0	0	0	5	0	5
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.6%			2.0%			2.0%		
Peak Hour Factor	0.80			0.90			0.75			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	317	5	5	297	0	0	0	0	5	0	5
New Project Trips												
Trip Distribution IN	1%				38%	9%						
Trip Distribution OUT		38%					9%		1%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	3	45	0	0	116	27	10	0	1	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	3	45	0	0	116	27	10	0	1	0	0	0
2020 Buildout Total	3	362	5	5	413	27	10	0	1	5	0	5

PM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #2 Eastbound			Pinecrest Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	118	5	5	111	0	0	0	0	5	0	5
Pedestrians	0			0			0			0		
Heavy Vehicle %	1.8%			1.6%			2.0%			2.0%		
Peak Hour Factor	0.59			0.84			0.75			0.90		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	120	5	5	113	0	0	0	0	5	0	5
New Project Trips												
Trip Distribution IN	1%				38%	9%						
Trip Distribution OUT		38%					9%		1%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	2	76	0	0	41	9	18	0	2	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	2	76	0	0	41	9	18	0	2	0	0	0
2020 Buildout Total	2	196	5	5	154	9	18	0	2	5	0	5

INTERSECTION VOLUME DEVELOPMENT

Phase 1
Masters Way at Site Driveway #3
AM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #3 Eastbound			- Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes	0	311	0	0	291	0	0	0	0			
Pedestrians	0			0			0					
Heavy Vehicle %	1.8%			1.6%			2.0%					
Peak Hour Factor	0.80			0.90			0.75					
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	317	0	0	297	0	0	0	0	0	0	0
New Project Trips												
Trip Distribution IN	7%	1%				38%						
Trip Distribution OUT					1%		38%		7%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	21	3	0	0	1	116	45	0	8	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	21	3	0	0	1	116	45	0	8	0	0	0
2020 Buildout Total	21	320	0	0	298	116	45	0	8	0	0	0

PM PEAK HOUR

Description	Masters Way Northbound			Masters Way Southbound			Site Driveway #3 Eastbound			- Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes	0	118	0	0	111	0	0	0	0			
Pedestrians	0			0			0					
Heavy Vehicle %	1.8%			1.6%			2.0%			0.0%		
Peak Hour Factor	0.59			0.84			0.75					
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	120	0	0	113	0	0	0	0	0	0	0
New Project Trips												
Trip Distribution IN	7%	1%				38%						
Trip Distribution OUT					1%		38%		7%			
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	7	2	0	0	2	41	76	0	13	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	7	2	0	0	2	41	76	0	13	0	0	0
2020 Buildout Total	7	122	0	0	115	41	76	0	13	0	0	0

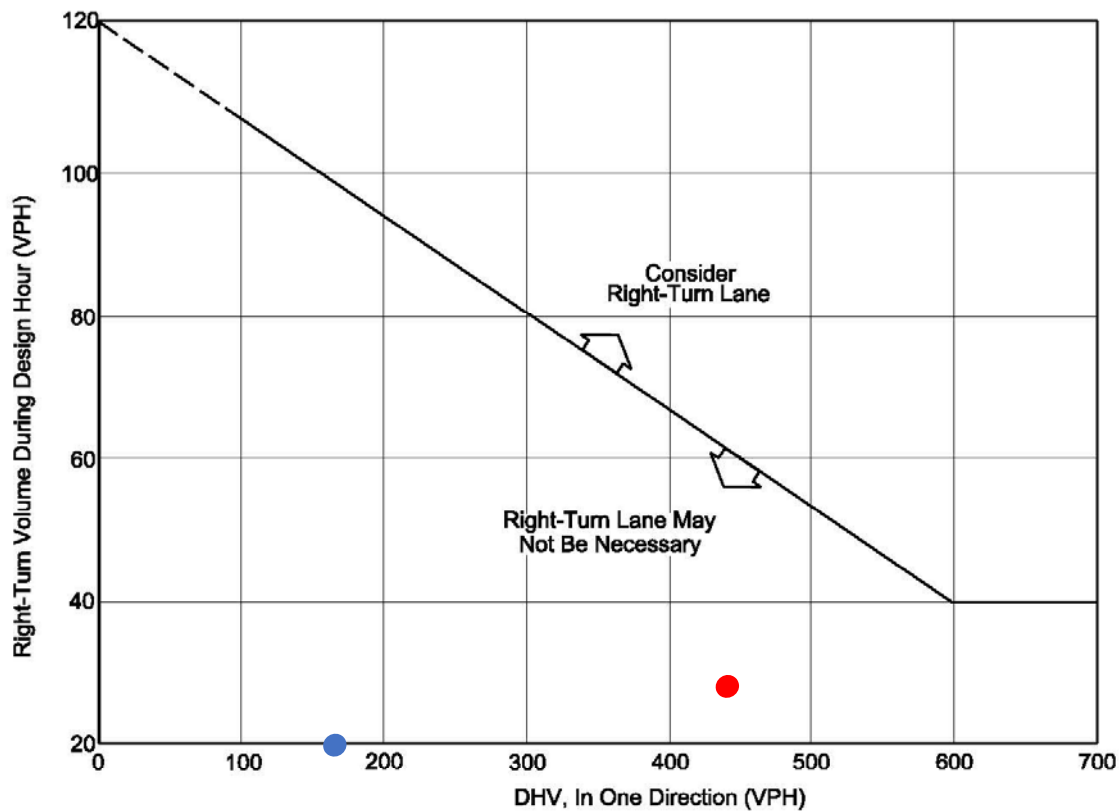
INTERSECTION VOLUME DEVELOPMENT

Phase 1
Masters Way at H.E. McCracken Circle
AM PEAK HOUR

Description	- Northbound			Masters Way Southbound			H.E. McCracken Circle Eastbound			H.E. McCracken Circle Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 AM Volumes				148	0	114	157	159	0	0	44	144
Pedestrians				1			0			0		
Heavy Vehicle %				2.6%			1.6%			2.7%		
Peak Hour Factor				0.72			0.55			0.80		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	0	0	151	0	116	160	162	0	0	45	147
New Project Trips												
Trip Distribution IN							8%					
Trip Distribution OUT						8%						
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	0	0	0	9	24	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	0	0	0	9	24	0	0	0	0	0
2020 Buildout Total	0	0	0	151	0	125	184	162	0	0	45	147

PM PEAK HOUR

Description	- Northbound			Masters Way Southbound			H.E. McCracken Circle Eastbound			H.E. McCracken Circle Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2018 PM Volumes				63	0	19	11	27	0	0	35	98
Pedestrians				0			0			0		
Heavy Vehicle %		0.0%		2.6%			1.6%			2.7%		
Peak Hour Factor				0.64			0.73			0.51		
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
2020 Background Traffic	0	0	0	64	0	19	11	28	0	0	36	100
New Project Trips												
Trip Distribution IN							8%					
Trip Distribution OUT						8%						
Pass-by Project Trips												
Trip Distribution IN												
Trip Distribution OUT												
New Trips	0	0	0	0	0	15	9	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	0	0	0	15	9	0	0	0	0	0
2020 Buildout Total	0	0	0	64	0	34	20	28	0	0	36	100



Note: For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Example

● AM Peak Hour ● PM Peak Hour

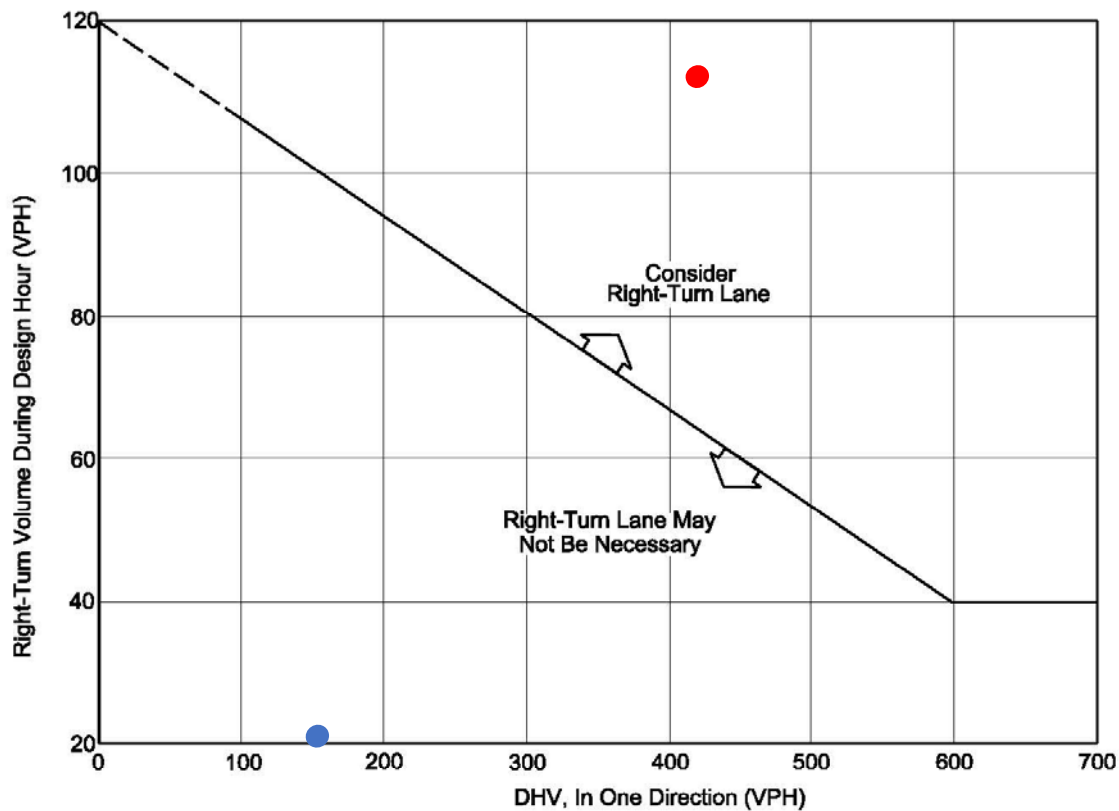
Given: Design Speed = 35 miles per hour Speed = 25 mph Speed = 25 mph
DHV = 250 vehicles per hour DHV = 445 DHV = 168
Right Turns = 100 vehicles per hour R-Turns = 27 R-Turns = 9

Problem: Determine if a right-turn lane is necessary.

Solution: To read the vertical axis, use $100 - 20 = 80$ vehicles per hour. The figure indicates that a right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

**GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS
ON TWO-LANE HIGHWAYS**

Figure 9.5-A



Note: For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Example

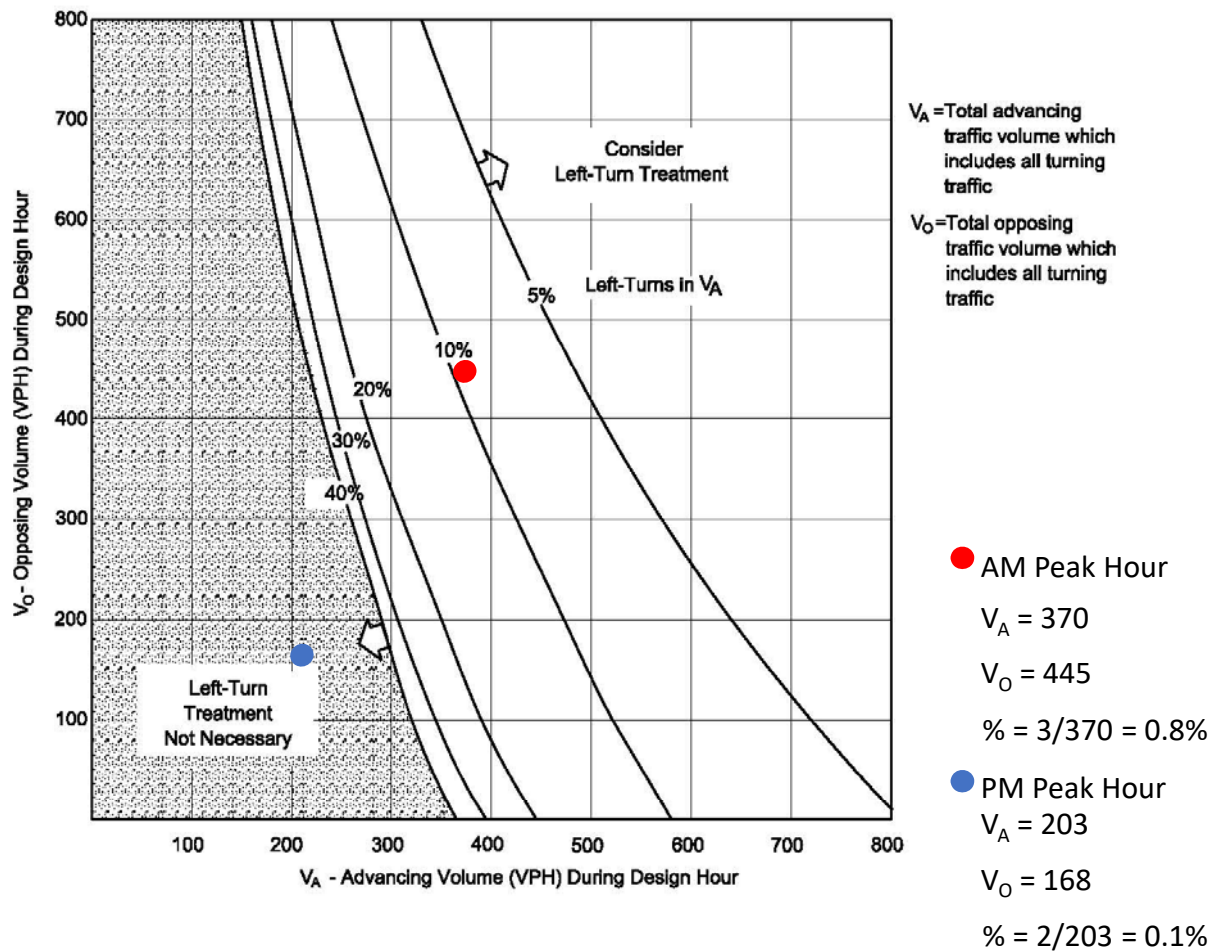
● AM Peak Hour ● PM Peak Hour

<u>Given:</u>	Design Speed	=	35 miles per hour	Speed = 25 mph	Speed = 25 mph
	DHV	=	250 vehicles per hour	DHV = 414	DHV = 156
	Right Turns	=	100 vehicles per hour	R-Turns = 116	R-Turns = 41 – 20 = 21
<u>Problem:</u>	Determine if a right-turn lane is necessary.				

Solution: To read the vertical axis, use $100 - 20 = 80$ vehicles per hour. The figure indicates that a right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

**GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS
ON TWO-LANE HIGHWAYS**

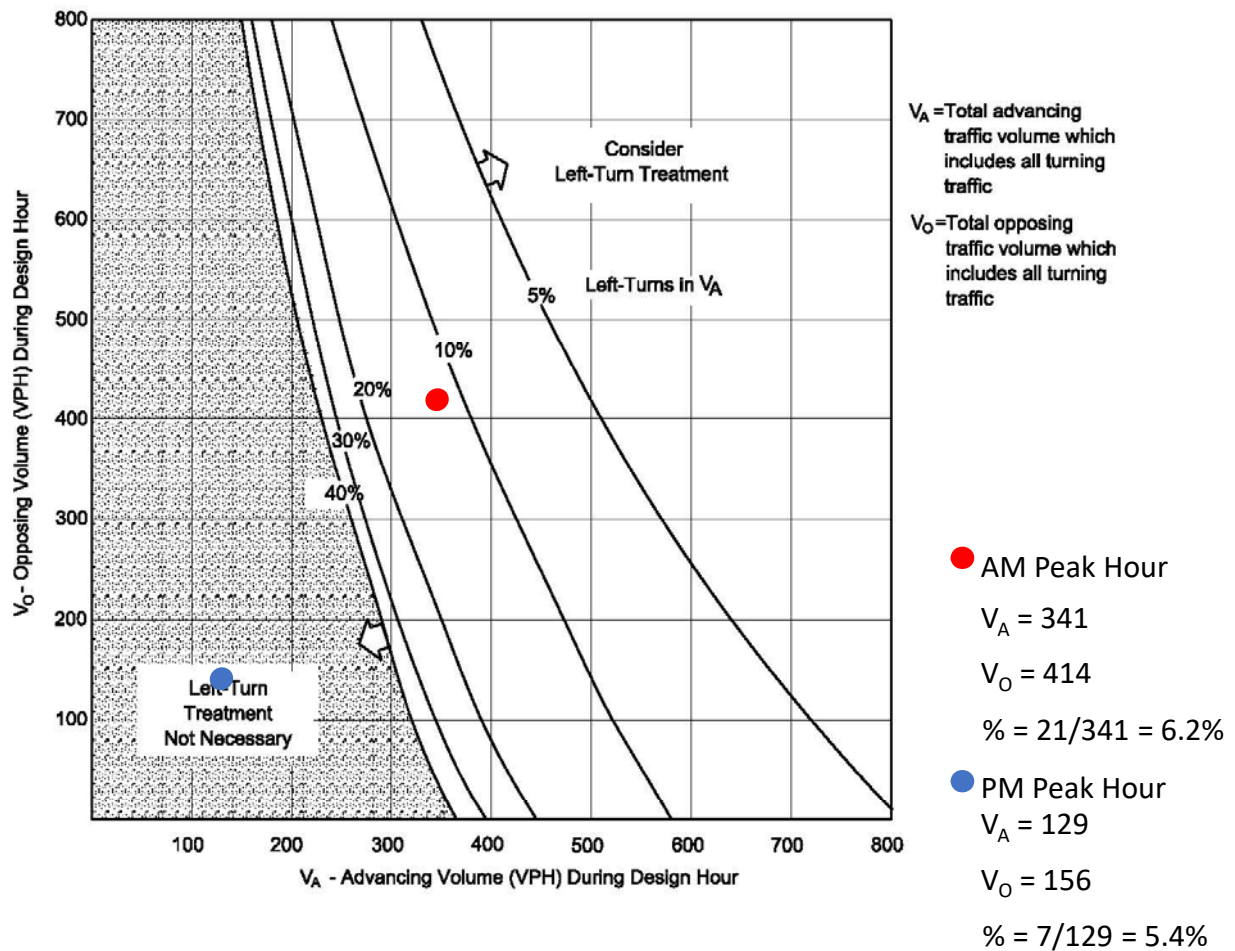
Figure 9.5-A



Instructions:

1. The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

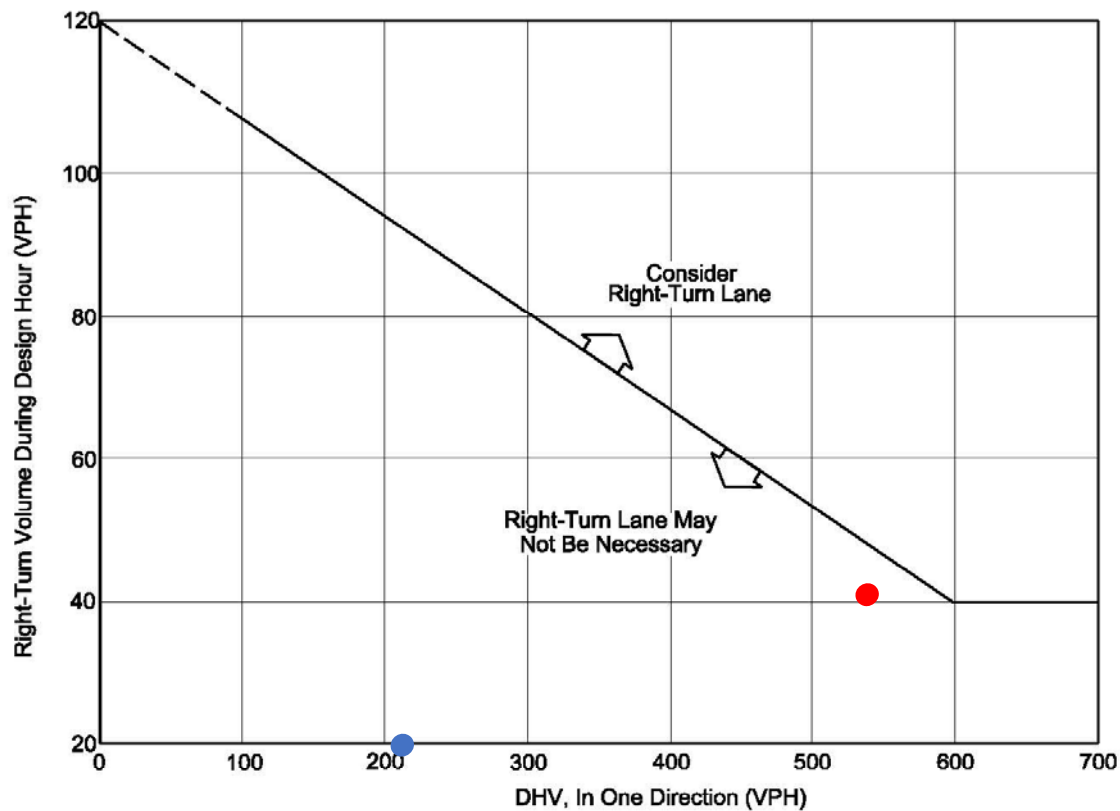
VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED
INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph)
Figure 9.5-G



Instructions:

1. The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph)
Figure 9.5-G



Note: For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Example

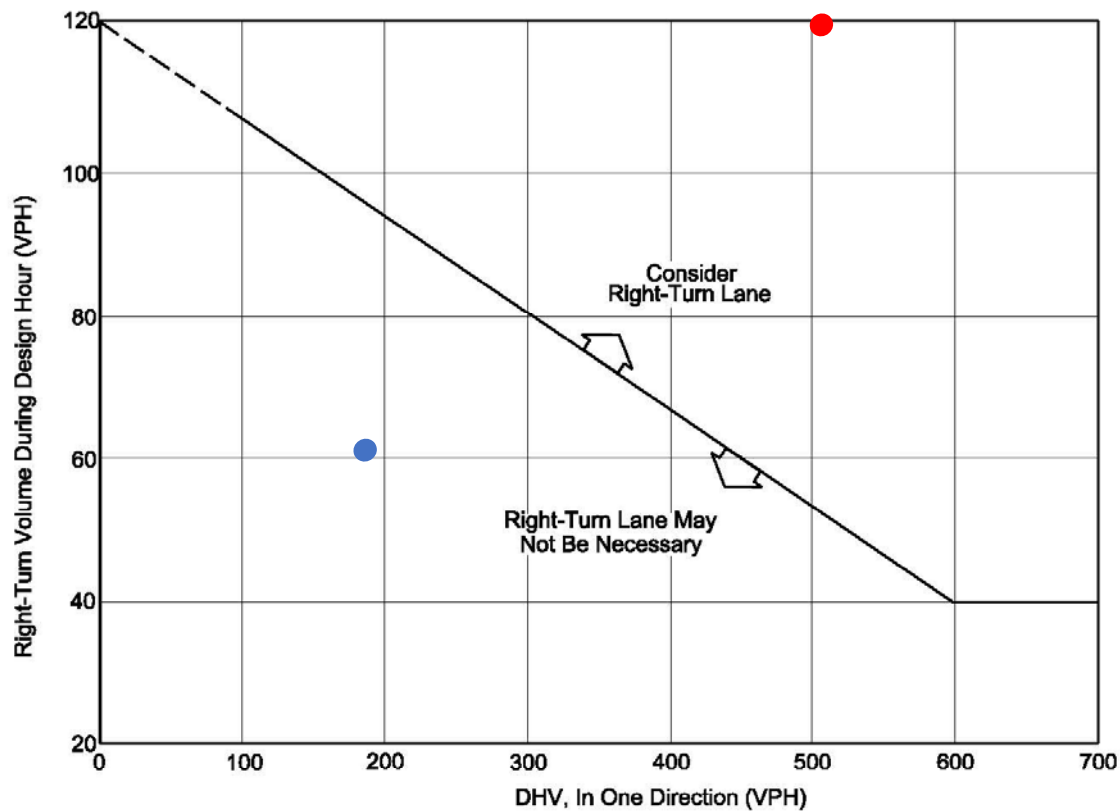
● AM Peak Hour ● PM Peak Hour

Given: Design Speed = 35 miles per hour Speed = 25 mph Speed = 25 mph
DHV = 250 vehicles per hour DHV = 547 DHV = 207
Right Turns = 100 vehicles per hour R-Turns = 41 R-Turns = 15

Problem: Determine if a right-turn lane is necessary.

Solution: To read the vertical axis, use $100 - 20 = 80$ vehicles per hour. The figure indicates that a right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

**GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS
ON TWO-LANE HIGHWAYS**
Figure 9.5-A



Note: For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Example

● AM Peak Hour ● PM Peak Hour

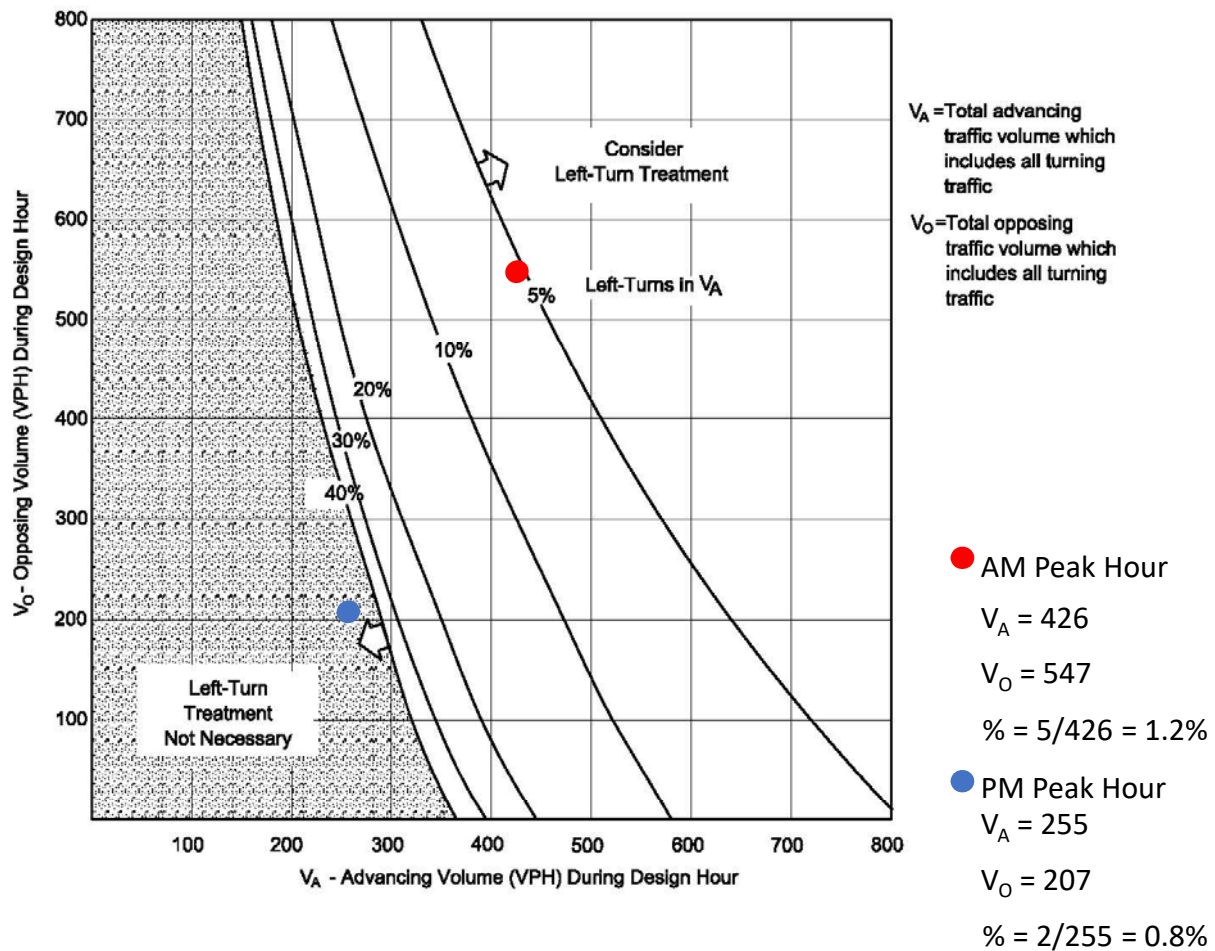
Given: Design Speed = 35 miles per hour Speed = 25 mph Speed = 25 mph
DHV = 250 vehicles per hour DHV = 502 DHV = 189
Right Turns = 100 vehicles per hour R-Turns = 175 R-Turns = 62

Problem: Determine if a right-turn lane is necessary.

Solution: To read the vertical axis, use $100 - 20 = 80$ vehicles per hour. The figure indicates that a right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

**GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS
ON TWO-LANE HIGHWAYS**

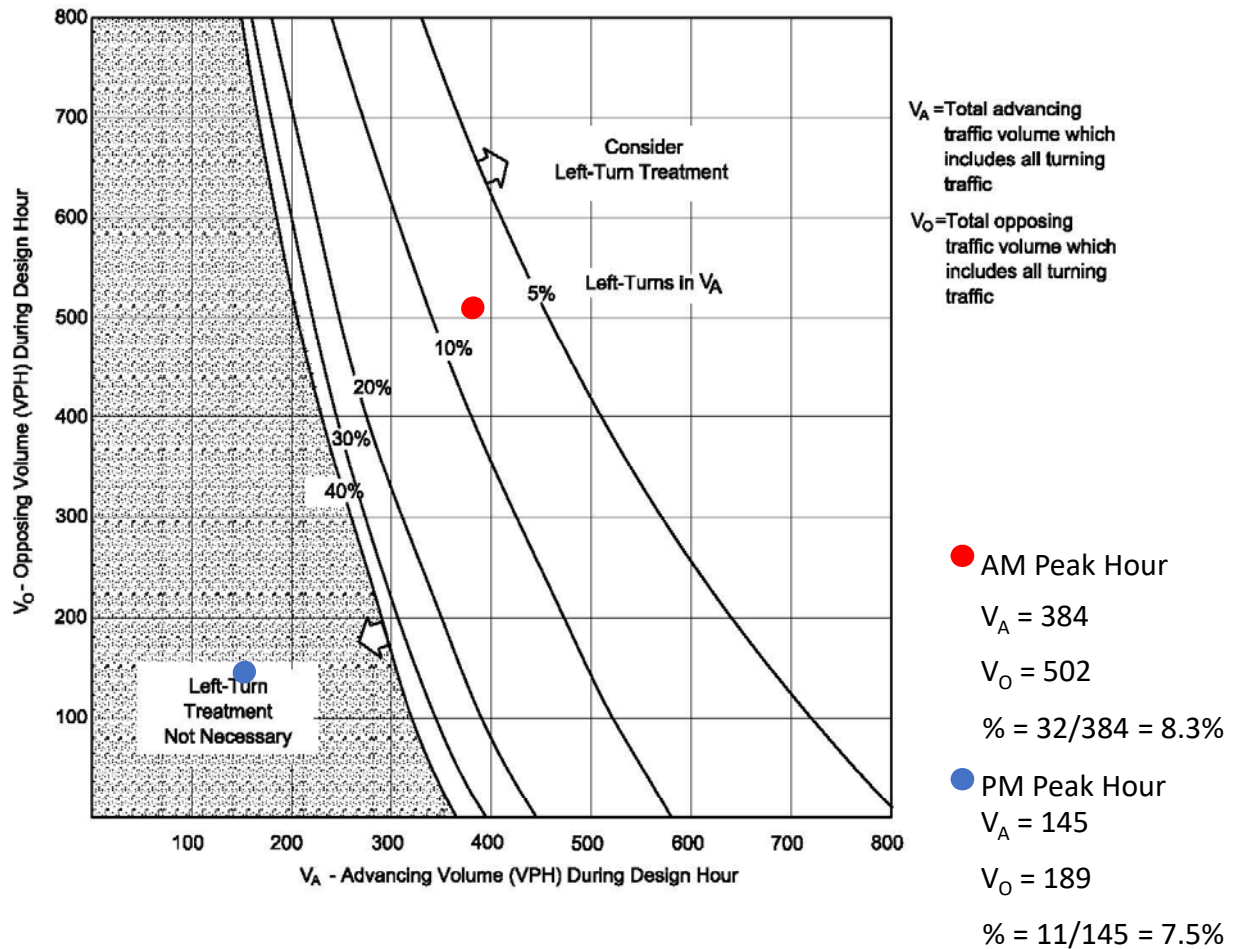
Figure 9.5-A



Instructions:

1. The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED
INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph)
Figure 9.5-G



Instructions:

1. The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.
























VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED
INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph)
Figure 9.5-G

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

Existing AM

07/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	74	36	110	29	403	29	333	171	687	359	64
Future Volume (veh/h)	83	74	36	110	29	403	29	333	171	687	359	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	93	83	0	74	92	0	35	406	0	808	422	0
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.82	0.82	0.82	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	132		125	131		64	1416		876	2189	
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.04	0.40	0.00	0.25	0.62	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	93	83	0	74	92	0	35	406	0	808	422	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.6	5.0	0.0	4.5	5.3	0.0	2.1	8.6	0.0	25.2	5.7	0.0
Cycle Q Clear(g_c), s	5.6	5.0	0.0	4.5	5.3	0.0	2.1	8.6	0.0	25.2	5.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	132		125	131		64	1416		876	2189	
V/C Ratio(X)	0.70	0.63		0.59	0.70		0.55	0.29		0.92	0.19	
Avail Cap(c_a), veh/h	314	314		314	330		234	1416		923	2189	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.9	49.6	0.0	49.8	50.2	0.0	52.4	22.6	0.0	40.2	9.2	0.0
Incr Delay (d2), s/veh	6.5	4.8	0.0	4.5	6.7	0.0	7.2	0.5	0.0	14.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.4	0.0	2.1	2.7	0.0	1.1	3.5	0.0	11.9	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	54.4	0.0	54.3	56.9	0.0	59.6	23.1	0.0	54.2	9.4	0.0
LnGrp LOS	E	D		D	E		E	C		D	A	
Approach Vol, veh/h		176	A		166	A		441	A		1230	A
Approach Delay, s/veh		55.5			55.8			26.0			38.8	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	74.0		13.2	33.5	50.0		13.7				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	14.5	* 59		19.5	29.5	* 44		19.5				
Max Q Clear Time (g_c+I1), s	4.1	7.7		7.3	27.2	10.6		7.6				
Green Ext Time (p_c), s	0.0	2.7		0.5	0.8	2.5		0.6				

Intersection Summary

HCM 6th Ctrl Delay 38.9









HCM 6th LOS D






Notes




User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	70.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	937	6	280	516	7	0	0	311	20	5	36
Future Vol, veh/h	11	937	6	280	516	7	0	0	311	20	5	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	90	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1090	7	311	573	8	0	0	389	25	6	45
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	581	0	0	1090	0	0	-	-	548	1769	2311	287
Stage 1	-	-	-	-	-	-	-	-	-	1195	1195	-
Stage 2	-	-	-	-	-	-	-	-	-	574	1116	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	989	-	-	636	-	-	0	0	480	53	38	710
Stage 1	-	-	-	-	-	-	0	0	-	198	258	-
Stage 2	-	-	-	-	-	-	0	0	-	471	281	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	989	-	-	636	-	-	-	-	479	~ 6	19	710
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 6	19	-
Stage 1	-	-	-	-	-	-	-	-	-	195	132	-
Stage 2	-	-	-	-	-	-	-	-	-	87	277	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			5.6			37.5			\$ 2021.9		
HCM LOS							E			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	479	989	-	-	636	-	-	17				
HCM Lane V/C Ratio	0.812	0.013	-	-	0.489	-	-	4.485				
HCM Control Delay (s)	37.5	8.7	-	-	16	-	-	\$ 2021.9				
HCM Lane LOS	E	A	-	-	C	-	-	F				
HCM 95th %tile Q(veh)	7.7	0	-	-	2.7	-	-	10.2				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s				+: Computation Not Defined				*: All major volume in platoon		

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	88	471	123	155	368
Future Vol, veh/h	26	88	471	123	155	368
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	58	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	152	561	146	191	454
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1170	281	0	0	707	0
Stage 1	561	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	186	716	-	-	887	-
Stage 1	535	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	146	716	-	-	887	-
Mov Cap-2 Maneuver	228	-	-	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.6	0	3			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	481	887	-	
HCM Lane V/C Ratio	-	-	0.409	0.216	-	
HCM Control Delay (s)	-	-	17.6	10.2	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	2	0.8	-	
























Intersection						
Int Delay, s/veh	50.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	157	159	44	144	148	114
Future Vol, veh/h	157	159	44	144	148	114
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	80	80	72	72
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	285	289	55	180	206	158
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	235	0	-	0	1004	146
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	859	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1332	-	-	-	267	898
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	413	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1332	-	-	-	~ 199	897
Mov Cap-2 Maneuver	-	-	-	-	~ 199	-
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	413	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.2	0		157.3		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1332	-	-	-	301	
HCM Lane V/C Ratio	0.214	-	-	-	1.209	
HCM Control Delay (s)	8.4	0	-	-	157.3	
HCM Lane LOS	A	A	-	-	F	
HCM 95th %tile Q(veh)	0.8	-	-	-	16.3	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

Existing PM

07/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	74	25	140	94	638	20	226	113	429	201	72
Future Volume (veh/h)	75	74	25	140	94	638	20	226	113	429	201	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	106	104	0	124	134	0	23	257	0	452	212	0
Peak Hour Factor	0.71	0.71	0.71	0.94	0.94	0.94	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	151		171	180		50	1569		550	2035	
Arrive On Green	0.08	0.08	0.00	0.10	0.10	0.00	0.03	0.44	0.00	0.16	0.57	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	106	104	0	124	134	0	23	257	0	452	212	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.0	5.9	0.0	7.0	7.2	0.0	1.3	4.5	0.0	13.0	2.8	0.0
Cycle Q Clear(g_c), s	6.0	5.9	0.0	7.0	7.2	0.0	1.3	4.5	0.0	13.0	2.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	151		171	180		50	1569		550	2035	
V/C Ratio(X)	0.70	0.69		0.72	0.75		0.46	0.16		0.82	0.10	
Avail Cap(c_a), veh/h	337	336		337	354		251	1569		990	2035	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.9	45.8	0.0	45.2	45.3	0.0	49.3	17.3	0.0	41.9	10.0	0.0
Incr Delay (d2), s/veh	5.8	5.6	0.0	5.7	6.0	0.0	6.4	0.2	0.0	3.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.8	0.0	3.3	3.6	0.0	0.7	1.8	0.0	5.6	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	51.4	0.0	50.9	51.3	0.0	55.7	17.5	0.0	45.0	10.1	0.0
LnGrp LOS	D	D		D	D		E	B		D	B	
Approach Vol, veh/h		210	A		258	A		280	A		664	A
Approach Delay, s/veh		51.6			51.2			20.7			33.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	65.0		15.4	21.9	51.5		14.2				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	14.5	* 59		19.5	29.5	* 44		19.5				
Max Q Clear Time (g_c+I1), s	3.3	4.8		9.2	15.0	6.5		8.0				
Green Ext Time (p_c), s	0.0	1.3		0.7	1.4	1.6		0.8				

Intersection Summary

HCM 6th Ctrl Delay 37.0









HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.






Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.




Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	589	4	100	869	30	0	0	118	20	7	20
Future Vol, veh/h	17	589	4	100	869	30	0	0	118	20	7	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	84	84	84	59	59	59	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	654	4	119	1035	36	0	0	200	27	10	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1071	0	0	654	0	0	-	-	327	1638	1965	518
Stage 1	-	-	-	-	-	-	-	-	-	1273	1273	-
Stage 2	-	-	-	-	-	-	-	-	-	365	692	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	647	-	-	929	-	-	0	0	669	66	62	502
Stage 1	-	-	-	-	-	-	0	0	-	177	237	-
Stage 2	-	-	-	-	-	-	0	0	-	627	443	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	647	-	-	929	-	-	-	-	669	41	53	502
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	41	53	-
Stage 1	-	-	-	-	-	-	-	-	-	172	207	-
Stage 2	-	-	-	-	-	-	-	-	-	427	430	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.9			12.7			180.1		
HCM LOS							B			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	647	-	-	929	-	-	71
HCM Lane V/C Ratio	0.299	0.029	-	-	0.128	-	-	0.907
HCM Control Delay (s)	12.7	10.7	-	-	9.4	-	-	180.1
HCM Lane LOS	B	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.4	-	-	4.5

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	45	322	19	43	355
Future Vol, veh/h	5	45	322	19	43	355
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	66	66	87	87	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	68	370	22	53	438
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	695	185	0	0	392	0
Stage 1	370	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	376	826	-	-	1163	-
Stage 1	669	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	359	826	-	-	1163	-
Mov Cap-2 Maneuver	458	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.2	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	765	1163	-	
HCM Lane V/C Ratio	-	-	0.099	0.046	-	
HCM Control Delay (s)	-	-	10.2	8.2	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	
























Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	27	35	98	63	19
Future Vol, veh/h	11	27	35	98	63	19
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	51	51	64	64
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	15	37	69	192	98	30
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	261	0	-	0	232	170
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1303	-	-	-	754	871
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	953	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1303	-	-	-	745	867
Mov Cap-2 Maneuver	-	-	-	-	745	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	953	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.3	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1303	-	-	-	770	
HCM Lane V/C Ratio	0.012	-	-	-	0.166	
HCM Control Delay (s)	7.8	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2020 No Build AM

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	79	38	117	31	430	31	355	182	732	383	68
Future Volume (veh/h)	88	79	38	117	31	430	31	355	182	732	383	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	89	0	80	98	0	38	433	0	861	451	0
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.82	0.82	0.82	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	138		130	137		66	1383		902	2179	
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.04	0.39	0.00	0.26	0.61	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	99	89	0	80	98	0	38	433	0	861	451	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.1	5.5	0.0	4.9	5.8	0.0	2.4	9.6	0.0	27.7	6.4	0.0
Cycle Q Clear(g_c), s	6.1	5.5	0.0	4.9	5.8	0.0	2.4	9.6	0.0	27.7	6.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	138		130	137		66	1383		902	2179	
V/C Ratio(X)	0.72	0.64		0.62	0.72		0.58	0.31		0.95	0.21	
Avail Cap(c_a), veh/h	307	307		307	323		228	1383		902	2179	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.9	50.6	0.0	50.8	51.3	0.0	53.6	24.0	0.0	41.1	9.7	0.0
Incr Delay (d2), s/veh	6.7	5.0	0.0	4.7	6.9	0.0	7.7	0.6	0.0	19.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.6	0.0	2.3	2.9	0.0	1.2	4.0	0.0	13.7	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	55.6	0.0	55.5	58.1	0.0	61.3	24.6	0.0	60.9	9.9	0.0
LnGrp LOS	E	E		E	E		E	C		E	A	
Approach Vol, veh/h		188	A		178	A		471	A		1312	A
Approach Delay, s/veh		56.6			56.9			27.6			43.4	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	75.3		13.8	35.0	50.0		14.3				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	14.5	* 59		19.5	29.5	* 44		19.5				
Max Q Clear Time (g_c+I1), s	4.4	8.4		7.8	29.7	11.6		8.1				
Green Ext Time (p_c), s	0.0	3.0		0.5	0.0	2.7		0.7				

Intersection Summary

HCM 6th Ctrl Delay	42.2
HCM 6th LOS	D

Notes









User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.






HCM 6th TWSC

6: Masters Way/Crossings Blvd & Bluffton Pkwy

Intersection												
Int Delay, s/veh	135.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	999	6	298	550	7	0	0	317	20	5	37
Future Vol, veh/h	12	999	6	298	550	7	0	0	317	20	5	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	90	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	1162	7	331	611	8	0	0	396	25	6	46
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	619	0	0	1162	0	0	-	-	584	1885	2463	306
Stage 1	-	-	-	-	-	-	-	-	-	1273	1273	-
Stage 2	-	-	-	-	-	-	-	-	-	612	1190	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	957	-	-	597	-	-	0	0	455	43	30	690
Stage 1	-	-	-	-	-	-	0	0	-	177	237	-
Stage 2	-	-	-	-	-	-	0	0	-	447	259	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	957	-	-	597	-	-	-	-	454	~ 3	13	690
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 3	13	-
Stage 1	-	-	-	-	-	-	-	-	-	174	106	-
Stage 2	-	-	-	-	-	-	-	-	-	56	255	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			6.4			47			\$ 4234.7		
HCM LOS							E			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	454	957	-	-	597	-	-	9				
HCM Lane V/C Ratio	0.873	0.015	-	-	0.555	-	-	8.611				
HCM Control Delay (s)	47	8.8	-	-	18.3	-	-	\$ 4234.7				
HCM Lane LOS	E	A	-	-	C	-	-	F				
HCM 95th %tile Q(veh)	9.1	0	-	-	3.4	-	-	11.2				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s				+: Computation Not Defined				*: All major volume in platoon		

HCM 6th TWSC

9: Buckwalter Pkwy & H.E. McCracken Cir

Intersection						
Int Delay, s/veh	3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	90	502	131	165	392
Future Vol, veh/h	27	90	502	131	165	392
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	120	598	156	204	484
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1248	299	0	0	754	0
Stage 1	598	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	165	697	-	-	852	-
Stage 1	512	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	126	697	-	-	852	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.4	0	3.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	446	852	-	
HCM Lane V/C Ratio	-	-	0.35	0.239	-	
HCM Control Delay (s)	-	-	17.4	10.5	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	1.5	0.9	-	

HCM 6th TWSC

10: H.E. McCracken Cir & Masters Way

Intersection

Int Delay, s/veh 18.5

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 160 162 45 147 151 116

Future Vol, veh/h 160 162 45 147 151 116

Conflicting Peds, #/hr 0 0 0 0 0 1

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 75 75 80 80 75 75

Heavy Vehicles, % 2 2 3 3 3 3

Mvmt Flow 213 216 56 184 201 155

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 240 0 - 0 790 149

Stage 1 - - - - 148 -

Stage 2 - - - - 642 -

Critical Hdwy 4.12 - - - 6.43 6.23

Critical Hdwy Stg 1 - - - - 5.43 -

Critical Hdwy Stg 2 - - - - 5.43 -

Follow-up Hdwy 2.218 - - - 3.527 3.327

Pot Cap-1 Maneuver 1327 - - - 358 895

Stage 1 - - - - 877 -

Stage 2 - - - - 522 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1327 - - - 293 894

Mov Cap-2 Maneuver - - - - 293 -

Stage 1 - - - - 717 -

Stage 2 - - - - 522 -

Approach EB WB SB

HCM Control Delay, s 4.1 0 48.2

HCM LOS E

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1327 - - - 414

HCM Lane V/C Ratio 0.161 - - - 0.86

HCM Control Delay (s) 8.2 0 - - 48.2

HCM Lane LOS A A - - E
























HCM 95th %tile Q(veh) 0.6 - - - 8.5

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2020 No Build PM

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	79	27	149	100	680	21	241	120	457	214	77
Future Volume (veh/h)	80	79	27	149	100	680	21	241	120	457	214	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	111	0	132	143	0	24	274	0	481	225	0
Peak Hour Factor	0.71	0.71	0.71	0.94	0.94	0.94	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	158		180	189		51	1518		579	2011	
Arrive On Green	0.09	0.09	0.00	0.10	0.10	0.00	0.03	0.43	0.00	0.17	0.57	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	113	111	0	132	143	0	24	274	0	481	225	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.4	6.3	0.0	7.5	7.8	0.0	1.4	5.0	0.0	14.0	3.1	0.0
Cycle Q Clear(g_c), s	6.4	6.3	0.0	7.5	7.8	0.0	1.4	5.0	0.0	14.0	3.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	158		180	189		51	1518		579	2011	
V/C Ratio(X)	0.72	0.70		0.73	0.76		0.47	0.18		0.83	0.11	
Avail Cap(c_a), veh/h	333	332		333	350		248	1518		978	2011	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.2	46.2	0.0	45.5	45.6	0.0	49.8	18.5	0.0	42.0	10.5	0.0
Incr Delay (d2), s/veh	5.9	5.6	0.0	5.7	6.1	0.0	6.5	0.3	0.0	3.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	3.0	0.0	3.6	3.9	0.0	0.7	2.0	0.0	6.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.1	51.8	0.0	51.2	51.8	0.0	56.3	18.8	0.0	45.1	10.6	0.0
LnGrp LOS	D	D		D	D		E	B		D	B	
Approach Vol, veh/h		224	A		275	A		298	A		706	A
Approach Delay, s/veh		52.0			51.5			21.8			34.1	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	65.0		16.0	23.0	50.5		14.7				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	14.5	* 59		19.5	29.5	* 44		19.5				
Max Q Clear Time (g_c+I1), s	3.4	5.1		9.8	16.0	7.0		8.4				
Green Ext Time (p_c), s	0.0	1.4		0.8	1.4	1.7		0.8				

Intersection Summary










HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	8.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	628	4	107	926	32	0	0	120	20	7	20
Future Vol, veh/h	18	628	4	107	926	32	0	0	120	20	7	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	84	84	84	75	75	75	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	698	4	127	1102	38	0	0	160	27	10	27






Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1140	0	0	698	0	0	-	-	349	1745	2094	551
Stage 1	-	-	-	-	-	-	-	-	-	1356	1356	-
Stage 2	-	-	-	-	-	-	-	-	-	389	738	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	609	-	-	894	-	-	0	0	647	55	52	478
Stage 1	-	-	-	-	-	-	0	0	-	157	216	-
Stage 2	-	-	-	-	-	-	0	0	-	606	422	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	609	-	-	894	-	-	-	-	647	36	43	478
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	36	43	-
Stage 1	-	-	-	-	-	-	-	-	-	152	185	-
Stage 2	-	-	-	-	-	-	-	-	-	441	408	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			1			12.4			236.7		
HCM LOS							B			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	647	609	-	-	894	-	-	62
HCM Lane V/C Ratio	0.247	0.033	-	-	0.142	-	-	1.038
HCM Control Delay (s)	12.4	11.1	-	-	9.7	-	-	236.7
HCM Lane LOS	B	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1	0.1	-	-	0.5	-	-	5.1

HCM 6th TWSC

9: Buckwalter Pkwy & H.E. McCracken Cir

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	46	343	20	46	378
Future Vol, veh/h	5	46	343	20	46	378
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	87	87	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	61	394	23	57	467
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	742	197	0	0	417	0
Stage 1	394	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	351	811	-	-	1138	-
Stage 1	650	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	333	811	-	-	1138	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.3	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	748	1138	-	
HCM Lane V/C Ratio	-	-	0.091	0.05	-	
HCM Control Delay (s)	-	-	10.3	8.3	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-	

HCM 6th TWSC

10: H.E. McCracken Cir & Masters Way

Intersection

Int Delay, s/veh 3.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 11 28 36 100 64 19

Future Vol, veh/h 11 28 36 100 64 19

Conflicting Peds, #/hr 0 0 0 0 0 5

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 75 75 75 75 75 75

Heavy Vehicles, % 2 2 3 3 3 3

Mvmt Flow 15 37 48 133 85 25

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 181 0 - 0 182 120

Stage 1 - - - - 115 -

Stage 2 - - - - 67 -

Critical Hdwy 4.12 - - - 6.43 6.23

Critical Hdwy Stg 1 - - - - 5.43 -

Critical Hdwy Stg 2 - - - - 5.43 -

Follow-up Hdwy 2.218 - - - 3.527 3.327

Pot Cap-1 Maneuver 1394 - - - 805 929

Stage 1 - - - - 907 -

Stage 2 - - - - 953 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1394 - - - 796 925

Mov Cap-2 Maneuver - - - - 796 -

Stage 1 - - - - 897 -

Stage 2 - - - - 953 -

Approach EB WB SB

HCM Control Delay, s 2.1 0 10.1

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1394 - - - 822

HCM Lane V/C Ratio 0.011 - - - 0.135

HCM Control Delay (s) 7.6 0 - - 10.1

HCM Lane LOS A A - - B

HCM 95th %tile Q(veh) 0 - - - 0.5


ATTACHMENT 4

HCM 6th Signalized Intersection Summary

2020 Build AM

3: Buckwalter Pkwy./Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔	↔	↔	↔↔	↔	↔↔	↔↔	↔
Traffic Volume (veh/h)	88	79	38	125	31	466	31	355	203	824	383	68
Future Volume (veh/h)	88	79	38	125	31	466	31	355	203	824	383	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	89	0	84	104	0	38	433	0	969	451	0
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.82	0.82	0.82	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	132		131	138		64	1249		1085	2238	
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.04	0.35	0.00	0.31	0.63	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	99	89	0	84	104	0	38	433	0	969	451	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.6	5.9	0.0	5.5	6.6	0.0	2.5	10.9	0.0	32.3	6.5	0.0
Cycle Q Clear(g_c), s	6.6	5.9	0.0	5.5	6.6	0.0	2.5	10.9	0.0	32.3	6.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	132		131	138		64	1249		1085	2238	
V/C Ratio(X)	0.75	0.67		0.64	0.75		0.60	0.35		0.89	0.20	
Avail Cap(c_a), veh/h	214	213		214	225		111	1249		1532	2238	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.7	54.4	0.0	54.3	54.8	0.0	57.3	28.9	0.0	39.5	9.5	0.0
Incr Delay (d2), s/veh	8.1	5.8	0.0	5.1	8.1	0.0	8.6	0.8	0.0	5.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.8	0.0	2.6	3.4	0.0	1.3	4.6	0.0	13.9	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	60.3	0.0	59.4	62.9	0.0	65.9	29.7	0.0	44.7	9.7	0.0
LnGrp LOS	E	E		E	E		E	C		D	A	
Approach Vol, veh/h		188	A		188	A		471	A		1420	A
Approach Delay, s/veh		61.6			61.3			32.6			33.6	
Approach LOS		E			E			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	82.0		14.4	43.4	48.4		14.5				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	7.5	* 76		14.5	53.5	* 30		14.5				
Max Q Clear Time (g_c+I1), s	4.5	8.5		8.6	34.3	12.9		8.6				
Green Ext Time (p_c), s	0.0	3.0		0.3	3.6	2.3		0.4				

Intersection Summary

HCM 6th Ctrl Delay 38.0

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Masters Way/Crossings Blvd & Bluffton Pkwy

2020 Build AM

07/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1029	58	389	626	7	166	10	197	20	5	37
Future Volume (veh/h)	12	1029	58	389	626	7	166	10	197	20	5	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1197	0	432	696	8	208	12	246	25	6	46
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	1529		461	2369	1057	349	18	371	80	31	112
Arrive On Green	0.43	0.43	0.00	0.19	0.67	0.67	0.07	0.24	0.24	0.13	0.13	0.13
Sat Flow, veh/h	743	3554	1585	1781	3554	1585	1781	74	1517	336	232	843
Grp Volume(v), veh/h	14	1197	0	432	696	8	208	0	258	77	0	0
Grp Sat Flow(s), veh/h/ln	743	1777	1585	1781	1777	1585	1781	0	1591	1412	0	0
Q Serve(g_s), s	1.5	39.1	0.0	23.0	11.0	0.2	9.0	0.0	19.7	1.9	0.0	0.0
Cycle Q Clear(g_c), s	1.5	39.1	0.0	23.0	11.0	0.2	9.0	0.0	19.7	6.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	0.32		0.60
Lane Grp Cap(c), veh/h	373	1529		461	2369	1057	349	0	389	224	0	0
V/C Ratio(X)	0.04	0.78		0.94	0.29	0.01	0.60	0.00	0.66	0.34	0.00	0.00
Avail Cap(c_a), veh/h	373	1529		555	2369	1057	349	0	389	224	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.3	33.0	0.0	35.2	9.3	7.5	47.8	0.0	46.0	53.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	4.1	0.0	21.5	0.3	0.0	2.8	0.0	8.6	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	17.4	0.0	16.8	4.2	0.1	2.3	0.0	8.8	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	37.1	0.0	56.8	9.6	7.6	50.6	0.0	54.6	54.3	0.0	0.0
LnGrp LOS	C	D		E	A	A	D	A	D	D	A	A
Approach Vol, veh/h	1211		A	1136			466			77		
Approach Delay, s/veh	36.9			27.5			52.8			54.3		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	31.9	64.1		39.0		96.0	15.0	24.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s	33.0	51.0		33.0		90.0	9.0	18.0				
Max Q Clear Time (g_c+25.0), s	25.0	41.1		21.7		13.0	11.0	8.7				
Green Ext Time (p_c), s	0.9	5.7		1.2		5.5	0.0	0.2				

Intersection Summary






HCM 6th Ctrl Delay 36.3





HCM 6th LOS D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	1	5	0	5	3	362	5	5	413	27
Future Vol, veh/h	10	0	1	5	0	5	3	362	5	5	413	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	90	90	90	80	80	80	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	0	1	6	0	6	4	453	6	6	459	30
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	953	953	474	951	965	456	489	0	0	459	0	0
Stage 1	486	486	-	464	464	-	-	-	-	-	-	-
Stage 2	467	467	-	487	501	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	239	259	590	240	255	604	1074	-	-	1102	-	-
Stage 1	563	551	-	578	564	-	-	-	-	-	-	-
Stage 2	576	562	-	562	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	234	256	590	237	252	604	1074	-	-	1102	-	-
Mov Cap-2 Maneuver	234	256	-	237	252	-	-	-	-	-	-	-
Stage 1	560	547	-	575	561	-	-	-	-	-	-	-
Stage 2	568	559	-	556	539	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	20.4		15.9		0.1		0.1					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1074	-	-	248	340	1102	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.059	0.033	0.005	-	-				
HCM Control Delay (s)	8.4	0	-	20.4	15.9	8.3	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	90	523	155	165	400
Future Vol, veh/h	36	90	523	155	165	400
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	120	623	185	204	494
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1278	312	0	0	808	0
Stage 1	623	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	158	684	-	-	813	-
Stage 1	497	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	118	684	-	-	813	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	20.4	0	3.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	400	813	-	
HCM Lane V/C Ratio	-	-	0.42	0.251	-	
HCM Control Delay (s)	-	-	20.4	10.9	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	2	1	-	

Intersection						
Int Delay, s/veh	13.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	184	162	45	147	151	125
Future Vol, veh/h	184	162	45	147	151	125
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	80	80	75	75
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	245	216	56	184	201	167
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	240	0	-	0	854	149
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1327	-	-	-	328	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1327	-	-	-	259	894
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	488	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.4	0		34.4		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1327	-	-	-	259	894
HCM Lane V/C Ratio	0.185	-	-	-	0.777	0.186
HCM Control Delay (s)	8.3	0	-	-	54.7	9.9
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.7	-	-	-	5.8	0.7

Intersection






Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1046	61	76	598	24	30
Future Vol, veh/h	1046	61	76	598	24	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	260	250	-	0	200
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	93	93	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1231	72	82	643	32	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1303
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	527
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	527
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	23
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	156	433	-	-	527	-
HCM Lane V/C Ratio	0.205	0.092	-	-	0.155	-
HCM Control Delay (s)	33.9	14.2	-	-	13.1	-
HCM Lane LOS	D	B	-	-	B	-
HCM 95th %tile Q(veh)	0.7	0.3	-	-	0.5	-
























Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	8	21	320	298	116
Future Vol, veh/h	45	8	21	320	298	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	80	80	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	11	26	400	331	129
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	783	331	460	0	-	0
Stage 1	331	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	362	711	1101	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	711	1101	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.3	0.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1101	-	351	711	-	-
HCM Lane V/C Ratio	0.024	-	0.171	0.015	-	-
HCM Control Delay (s)	8.3	0	17.4	10.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0	-	-

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2020 Build PM

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	79	27	163	100	740	21	241	127	489	214	77
Future Volume (veh/h)	80	79	27	163	100	740	21	241	127	489	214	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	111	0	140	153	0	24	274	0	515	225	0
Peak Hour Factor	0.71	0.71	0.71	0.94	0.94	0.94	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	160		196	206		52	1404		626	1944	
Arrive On Green	0.09	0.09	0.00	0.11	0.11	0.00	0.03	0.40	0.00	0.18	0.55	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	113	111	0	140	153	0	24	274	0	515	225	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.2	6.1	0.0	7.6	8.0	0.0	1.3	5.1	0.0	14.4	3.1	0.0
Cycle Q Clear(g_c), s	6.2	6.1	0.0	7.6	8.0	0.0	1.3	5.1	0.0	14.4	3.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	160		196	206		52	1404		626	1944	
V/C Ratio(X)	0.70	0.69		0.72	0.74		0.46	0.20		0.82	0.12	
Avail Cap(c_a), veh/h	363	362		487	512		168	1404		1358	1944	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	44.4	0.0	43.2	43.4	0.0	48.0	19.9	0.0	39.6	11.0	0.0
Incr Delay (d2), s/veh	5.5	5.3	0.0	4.8	5.3	0.0	6.3	0.3	0.0	2.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	2.9	0.0	3.6	3.9	0.0	0.7	2.0	0.0	6.1	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	49.7	0.0	48.0	48.6	0.0	54.3	20.2	0.0	42.4	11.1	0.0
LnGrp LOS	D	D		D	D		D	C		D	B	
Approach Vol, veh/h		224	A		293	A		298	A		740	A
Approach Delay, s/veh		49.8			48.4			23.0			32.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	61.0		16.5	23.7	45.7		14.6				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	9.5	* 55		27.5	39.5	* 25		20.5				
Max Q Clear Time (g_c+I1), s	3.3	5.1		10.0	16.4	7.1		8.2				
Green Ext Time (p_c), s	0.0	1.4		1.1	1.8	1.4		0.9				

Intersection Summary

HCM 6th Ctrl Delay 36.4

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

6: Masters Way/Crossings Blvd & Bluffton Pkwy

2020 Build PM

07/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	678	22	139	953	32	89	4	121	20	7	20
Future Volume (veh/h)	18	678	22	139	953	32	89	4	121	20	7	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	753	0	165	1135	38	119	5	161	27	10	27
Peak Hour Factor	0.90	0.90	0.90	0.84	0.84	0.84	0.75	0.75	0.75	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	1989		465	2343	1045	351	12	388	138	57	115
Arrive On Green	0.56	0.56	0.00	0.06	0.66	0.66	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	478	3554	1585	1781	3554	1585	1370	48	1541	396	227	455
Grp Volume(v), veh/h	20	753	0	165	1135	38	119	0	166	64	0	0
Grp Sat Flow(s), veh/h/ln	478	1777	1585	1781	1777	1585	1370	0	1589	1078	0	0
Q Serve(g_s), s	2.9	16.0	0.0	5.1	21.6	1.1	1.1	0.0	11.8	1.8	0.0	0.0
Cycle Q Clear(g_c), s	11.1	16.0	0.0	5.1	21.6	1.1	14.7	0.0	11.8	13.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	0.42		0.42
Lane Grp Cap(c), veh/h	292	1989		465	2343	1045	351	0	400	309	0	0
V/C Ratio(X)	0.07	0.38		0.35	0.48	0.04	0.34	0.00	0.41	0.21	0.00	0.00
Avail Cap(c_a), veh/h	292	1989		644	2343	1045	351	0	400	309	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.7	16.6	0.0	11.8	11.5	8.0	43.5	0.0	42.2	41.6	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.6	0.0	0.5	0.7	0.1	2.6	0.0	3.2	1.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	6.6	0.0	2.0	8.3	0.4	3.7	0.0	5.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.1	17.2	0.0	12.2	12.2	8.1	46.1	0.0	45.3	43.1	0.0	0.0
LnGrp LOS	B	B		B	B	A	D	A	D	D	A	A
Approach Vol, veh/h	773		A	1338			285			64		
Approach Delay, s/veh	17.2			12.1			45.7			43.1		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	3.4	81.6		40.0		95.0		40.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	21.0	62.0		34.0		89.0		34.0				
Max Q Clear Time (g_c+I1), s	18.0			15.6		23.6		16.7				
Green Ext Time (p_c), s	0.3	6.3		0.2		11.2		1.2				





Intersection Summary






HCM 6th Ctrl Delay 18.4





HCM 6th LOS B

Notes






Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	0	2	5	0	5	2	196	5	5	154	9
Future Vol, veh/h	18	0	2	5	0	5	2	196	5	5	154	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	90	90	90	75	75	75	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	3	6	0	6	3	261	7	6	183	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	475	475	189	473	477	265	194	0	0	268	0	0
Stage 1	201	201	-	271	271	-	-	-	-	-	-	-
Stage 2	274	274	-	202	206	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	500	488	853	501	487	774	1379	-	-	1296	-	-
Stage 1	801	735	-	735	685	-	-	-	-	-	-	-
Stage 2	732	683	-	800	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	484	853	496	483	774	1379	-	-	1296	-	-
Mov Cap-2 Maneuver	494	484	-	496	483	-	-	-	-	-	-	-
Stage 1	799	731	-	733	683	-	-	-	-	-	-	-
Stage 2	725	681	-	794	727	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.4		11.1		0.1		0.2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1379	-	-	516	605	1296	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.052	0.018	0.005	-	-				
HCM Control Delay (s)	7.6	0	-	12.4	11.1	7.8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	46	350	29	46	392
Future Vol, veh/h	20	46	350	29	46	392
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	87	87	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	61	402	33	57	484
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	758	201	0	0	435	0
Stage 1	402	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	343	806	-	-	1121	-
Stage 1	644	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	326	806	-	-	1121	-
Mov Cap-2 Maneuver	430	-	-	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.6	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	637	1121	-	
HCM Lane V/C Ratio	-	-	0.138	0.051	-	
HCM Control Delay (s)	-	-	11.6	8.4	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-	

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	28	36	100	64	34
Future Vol, veh/h	20	28	36	100	64	34
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	27	37	48	133	85	45
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	181	0	-	0	206	120
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1394	-	-	-	780	929
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	930	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1394	-	-	-	764	925
Mov Cap-2 Maneuver	-	-	-	-	764	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	930	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.2	0		9.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1394	-	-	-	764	925
HCM Lane V/C Ratio	0.019	-	-	-	0.112	0.049
HCM Control Delay (s)	7.6	0	-	-	10.3	9.1
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.2

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Traffic Vol, veh/h	675	21	27	964	40	50
Future Vol, veh/h	675	21	27	964	40	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	260	250	-	150	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	94	94	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	711	22	29	1026	53	67
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	733	0	1282	356
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	868	-	157	640
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	868	-	152	640
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	529	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		15.5	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	640	-	-	868	-
HCM Lane V/C Ratio	0.19	0.104	-	-	0.033	-
HCM Control Delay (s)	20.8	11.3	-	-	9.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.3	-	-	0.1	-
























Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	76	13	7	122	115	41
Future Vol, veh/h	76	13	7	122	115	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	17	9	163	137	49
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	318	137	186	0	-	0
Stage 1	137	-	-	-	-	-
Stage 2	181	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	675	911	1388	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	670	911	1388	-	-	-
Mov Cap-2 Maneuver	670	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1388	-	670	911	-	-
HCM Lane V/C Ratio	0.007	-	0.151	0.019	-	-
HCM Control Delay (s)	7.6	0	11.3	9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0.1	-	-

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2029 No Build AM

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	105	51	156	41	573	41	473	243	977	510	91
Future Volume (veh/h)	118	105	51	156	41	573	41	473	243	977	510	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	118	0	106	131	0	50	577	0	1149	600	0
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.82	0.82	0.82	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	165		156	164		71	974		1258	2126	
Arrive On Green	0.09	0.09	0.00	0.09	0.09	0.00	0.04	0.27	0.00	0.36	0.60	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	133	118	0	106	131	0	50	577	0	1149	600	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.1	8.0	0.0	7.1	8.5	0.0	3.4	17.4	0.0	39.2	10.1	0.0
Cycle Q Clear(g_c), s	9.1	8.0	0.0	7.1	8.5	0.0	3.4	17.4	0.0	39.2	10.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	165		156	164		71	974		1258	2126	
V/C Ratio(X)	0.81	0.72		0.68	0.80		0.71	0.59		0.91	0.28	
Avail Cap(c_a), veh/h	209	208		209	219		135	974		1493	2126	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.1	54.6	0.0	54.8	55.4	0.0	58.7	38.9	0.0	37.5	12.0	0.0
Incr Delay (d2), s/veh	16.5	8.4	0.0	5.4	14.1	0.0	12.1	2.6	0.0	8.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	3.9	0.0	3.4	4.6	0.0	1.8	7.7	0.0	17.1	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	63.0	0.0	60.2	69.5	0.0	70.8	41.6	0.0	45.5	12.3	0.0
LnGrp LOS	E	E		E	E		E	D		D	B	
Approach Vol, veh/h	251		A	237		A	627		A	1749		A
Approach Delay, s/veh	67.5			65.3			43.9			34.1		
Approach LOS	E			E			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	80.1		16.3	50.6	40.0		17.0				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	9.4	* 74		14.5	53.5	* 30		14.5				
Max Q Clear Time (g_c+I1), s	5.4	12.1		10.5	41.2	19.4		11.1				
Green Ext Time (p_c), s	0.0	4.1		0.3	3.8	2.6		0.4				

Intersection Summary

HCM 6th Ctrl Delay 41.8









HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.






* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	34.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	1332	9	398	734	10	0	0	347	22	6	40
Future Vol, veh/h	16	1332	9	398	734	10	0	0	347	22	6	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	90	90	90	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	1549	10	442	816	11	0	0	434	28	8	50
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	827	0	0	1549	0	0	-	-	778	2516	3287	408
Stage 1	-	-	-	-	-	-	-	-	-	1700	1700	-
Stage 2	-	-	-	-	-	-	-	-	-	816	1587	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	800	-	- ~ 424	-	-	-	0	0 ~ 339	~ 14	9	593	
Stage 1	-	-	-	-	-	-	0	0	-	96	146	-
Stage 2	-	-	-	-	-	-	0	0	-	337	166	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	800	-	- ~ 424	-	-	-	-	- ~ 338	-	0	593	
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	0	-	
Stage 1	-	-	-	-	-	-	-	-	-	94	0	-
Stage 2	-	-	-	-	-	-	-	-	-	162	-	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			30.3			180.5					
HCM LOS							F			-		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	338	800	-	- ~ 424	-	-	-	-				
HCM Lane V/C Ratio	1.283	0.023	-	- 1.043	-	-	-	-				
HCM Control Delay (s)	180.5	9.6	-	- 87	-	-	-	-				
HCM Lane LOS	F	A	-	- F	-	-	-	-				
HCM 95th %tile Q(veh)	20.1	0.1	-	- 14.1	-	-	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

HCM 6th TWSC

9: Buckwalter Pkwy & H.E. McCracken Cir

Intersection						
Int Delay, s/veh	5.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	98	670	175	220	523
Future Vol, veh/h	29	98	670	175	220	523
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	131	798	208	272	646
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1665	399	0	0	1006	0
Stage 1	798	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	88	601	-	-	684	-
Stage 1	404	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	53	601	-	-	684	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	243	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	45.9	0	4.1			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	248	684	-	
HCM Lane V/C Ratio	-	-	0.683	0.397	-	
HCM Control Delay (s)	-	-	45.9	13.7	-	
HCM Lane LOS	-	-	E	B	-	
HCM 95th %tile Q(veh)	-	-	4.4	1.9	-	

HCM 6th TWSC

10: H.E. McCracken Cir & Masters Way

Intersection

Int Delay, s/veh 34.9

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 175 177 49 161 165 127

Future Vol, veh/h 175 177 49 161 165 127

Conflicting Peds, #/hr 0 0 0 0 0 1

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 75 75 80 80 75 75

Heavy Vehicles, % 2 2 3 3 3 3

Mvmt Flow 233 236 61 201 220 169

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 262 0 - 0 864 163

Stage 1 - - - - 162 -

Stage 2 - - - - 702 -

Critical Hdwy 4.12 - - - 6.43 6.23

Critical Hdwy Stg 1 - - - - 5.43 -

Critical Hdwy Stg 2 - - - - 5.43 -

Follow-up Hdwy 2.218 - - - 3.527 3.327

Pot Cap-1 Maneuver 1302 - - - 323 879

Stage 1 - - - - 865 -

Stage 2 - - - - 490 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1302 - - - 256 878

Mov Cap-2 Maneuver - - - - 256 -

Stage 1 - - - - 687 -

Stage 2 - - - - 490 -

Approach EB WB SB

HCM Control Delay, s 4.2 0 95.4

HCM LOS F

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1302 - - - 370

HCM Lane V/C Ratio 0.179 - - - 1.052

HCM Control Delay (s) 8.4 0 - - 95.4

HCM Lane LOS A A - - F
























HCM 95th %tile Q(veh) 0.7 - - - 13.4

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2029 No Build PM

HH Christian Academy

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	105	36	199	134	907	28	321	161	610	286	102
Future Volume (veh/h)	107	105	36	199	134	907	28	321	161	610	286	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	151	148	0	178	191	0	32	365	0	642	301	0
Peak Hour Factor	0.71	0.71	0.71	0.94	0.94	0.94	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	195		230	241		60	1214		748	1863	
Arrive On Green	0.11	0.11	0.00	0.13	0.13	0.00	0.03	0.34	0.00	0.22	0.52	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	151	148	0	178	191	0	32	365	0	642	301	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.1	9.0	0.0	10.7	11.0	0.0	2.0	8.3	0.0	19.8	4.9	0.0
Cycle Q Clear(g_c), s	9.1	9.0	0.0	10.7	11.0	0.0	2.0	8.3	0.0	19.8	4.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	195		230	241		60	1214		748	1863	
V/C Ratio(X)	0.77	0.76		0.77	0.79		0.53	0.30		0.86	0.16	
Avail Cap(c_a), veh/h	314	313		443	465		121	1214		1234	1863	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.9	47.9	0.0	46.6	46.7	0.0	52.6	26.7	0.0	41.7	13.7	0.0
Incr Delay (d2), s/veh	6.4	6.0	0.0	5.5	5.8	0.0	7.0	0.6	0.0	3.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.2	0.0	5.0	5.4	0.0	1.0	3.5	0.0	8.4	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.3	53.9	0.0	52.1	52.5	0.0	59.6	27.4	0.0	45.1	13.9	0.0
LnGrp LOS	D	D		D	D		E	C		D	B	
Approach Vol, veh/h		299	A		369	A		397	A		943	A
Approach Delay, s/veh		54.1			52.3			30.0			35.2	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	64.0		19.8	29.5	43.8		17.6				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	7.5	* 58		27.5	39.5	* 26		19.5				
Max Q Clear Time (g_c+I1), s	4.0	6.9		13.0	21.8	10.3		11.1				
Green Ext Time (p_c), s	0.0	1.9		1.3	2.2	1.8		1.0				

Intersection Summary









HCM 6th Ctrl Delay	40.1
HCM 6th LOS	D






Notes




User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	42.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	837	6	142	1235	43	0	0	132	22	8	22
Future Vol, veh/h	24	837	6	142	1235	43	0	0	132	22	8	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	185	-	185	220	-	190	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	84	84	84	75	75	75	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	930	7	169	1470	51	0	0	176	30	11	30
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1521	0	0	930	0	0	-	-	465	2327	2792	735
Stage 1	-	-	-	-	-	-	-	-	-	1808	1808	-
Stage 2	-	-	-	-	-	-	-	-	-	519	984	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	435	-	-	731	-	-	0	0	544	~ 20	18	362
Stage 1	-	-	-	-	-	-	0	0	-	82	129	-
Stage 2	-	-	-	-	-	-	0	0	-	508	325	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	435	-	-	731	-	-	-	-	544	~ 11	13	362
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 11	13	-
Stage 1	-	-	-	-	-	-	-	-	-	77	99	-
Stage 2	-	-	-	-	-	-	-	-	-	322	305	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.1			14.8			\$ 1651		
HCM LOS							B			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	544	435	-	-	731	-	-	19				
HCM Lane V/C Ratio	0.324	0.061	-	-	0.231	-	-	3.749				
HCM Control Delay (s)	14.8	13.8	-	-	11.4	-	-	\$ 1651				
HCM Lane LOS	B	B	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0.9	-	-	9.4				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	50	458	27	61	505
Future Vol, veh/h	6	50	458	27	61	505
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	87	87	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	67	526	31	75	623
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	988	263	0	0	557	0
Stage 1	526	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	244	735	-	-	1010	-
Stage 1	557	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	226	735	-	-	1010	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.2	0	1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	654	1010	-	
HCM Lane V/C Ratio	-	-	0.114	0.075	-	
HCM Control Delay (s)	-	-	11.2	8.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-	

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	30	39	109	70	21
Future Vol, veh/h	12	30	39	109	70	21
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	16	40	52	145	93	28
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	197	0	-	0	197	130
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	72	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1376	-	-	-	789	917
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1376	-	-	-	780	913
Mov Cap-2 Maneuver	-	-	-	-	780	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	948	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.2	0		10.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1376	-	-	-	807	
HCM Lane V/C Ratio	0.012	-	-	-	0.15	
HCM Control Delay (s)	7.6	0	-	-	10.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	
























ATTACHMENT 4

HCM 6th Signalized Intersection Summary

2029 Build AM

3: ./Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	105	51	169	41	626	41	473	275	1116	510	91
Future Volume (veh/h)	118	105	51	169	41	626	41	473	275	1116	510	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	118	0	113	141	0	50	577	0	1313	600	0
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.82	0.82	0.82	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	164		165	173		71	797		1417	2114	
Arrive On Green	0.09	0.09	0.00	0.09	0.09	0.00	0.04	0.22	0.00	0.41	0.59	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	133	118	0	113	141	0	50	577	0	1313	600	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.1	8.0	0.0	7.7	9.2	0.0	3.5	18.7	0.0	45.0	10.3	0.0
Cycle Q Clear(g_c), s	9.1	8.0	0.0	7.7	9.2	0.0	3.5	18.7	0.0	45.0	10.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	164		165	173		71	797		1417	2114	
V/C Ratio(X)	0.81	0.72		0.69	0.81		0.71	0.72		0.93	0.28	
Avail Cap(c_a), veh/h	207	207		207	218		134	797		1584	2114	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.4	55.0	0.0	54.8	55.5	0.0	59.1	44.7	0.0	35.0	12.3	0.0
Incr Delay (d2), s/veh	16.8	8.6	0.0	6.5	17.0	0.0	12.2	5.7	0.0	9.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.0	0.0	3.7	5.1	0.0	1.8	8.6	0.0	19.6	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.3	63.5	0.0	61.3	72.5	0.0	71.4	50.4	0.0	44.1	12.6	0.0
LnGrp LOS	E	E		E	E		E	D		D	B	
Approach Vol, veh/h		251	A		254	A		627	A		1913	A
Approach Delay, s/veh		68.2			67.5			52.1			34.3	
Approach LOS		E			E			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	80.1		17.0	56.6	33.9		17.0				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	9.4	* 74		14.5	57.1	* 26		14.5				
Max Q Clear Time (g_c+I1), s	5.5	12.3		11.2	47.0	20.7		11.1				
Green Ext Time (p_c), s	0.0	4.1		0.3	4.1	1.7		0.4				

Intersection Summary

HCM 6th Ctrl Delay 43.5

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.






















Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 6: Masters Way/Crossings Blvd & Bluffton Pkwy

2029 Build AM

07/10/2018





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1377	87	536	849	10	190	10	231	22	6	40
Future Volume (veh/h)	16	1377	87	536	849	10	190	10	231	22	6	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	1601	0	596	943	11	238	12	289	28	8	50
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	1685		589	2448	1092	266	14	339	54	26	61
Arrive On Green	0.47	0.47	0.00	0.17	0.69	0.69	0.06	0.22	0.22	0.12	0.12	0.12
Sat Flow, veh/h	588	3554	1585	3456	3554	1585	1781	63	1525	154	219	517
Grp Volume(v), veh/h	19	1601	0	596	943	11	238	0	301	86	0	0
Grp Sat Flow(s),veh/h/ln	588	1777	1585	1728	1777	1585	1781	0	1589	889	0	0
Q Serve(g_s), s	2.4	58.2	0.0	23.0	15.2	0.3	8.0	0.0	24.5	3.4	0.0	0.0
Cycle Q Clear(g_c), s	2.4	58.2	0.0	23.0	15.2	0.3	8.0	0.0	24.5	14.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	0.33		0.58
Lane Grp Cap(c), veh/h	332	1685		589	2448	1092	266	0	353	141	0	0
V/C Ratio(X)	0.06	0.95		1.01	0.39	0.01	0.89	0.00	0.85	0.61	0.00	0.00
Avail Cap(c_a), veh/h	332	1685		589	2448	1092	266	0	353	141	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	34.0	0.0	56.0	8.9	6.6	54.0	0.0	50.4	57.9	0.0	0.0
Incr Delay (d2), s/veh	0.3	12.9	0.0	40.2	0.5	0.0	29.4	0.0	22.1	18.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	27.2	0.0	13.2	5.6	0.1	6.5	0.0	11.9	3.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	46.9	0.0	96.2	9.4	6.6	83.4	0.0	72.5	76.1	0.0	0.0
LnGrp LOS	B	D		F	A	A	F	A	E	E	A	A
Approach Vol, veh/h	1620		A	1550			539			86		
Approach Delay, s/veh	46.6			42.7			77.3			76.1		
Approach LOS	D			D			E			E		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	29.0	70.0	14.0	22.0		99.0		36.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s	23.0	64.0	8.0	16.0		93.0		30.0				
Max Q Clear Time (g_c+I1), s	25.0	60.2	10.0	16.0		17.2		26.5				
Green Ext Time (p_c), s	0.0	3.1	0.0	0.0		8.4		0.6				







Intersection Summary






HCM 6th Ctrl Delay	50.0
HCM 6th LOS	D

Notes







Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	0	2	6	0	6	5	415	6	6	500	41
Future Vol, veh/h	16	0	2	6	0	6	5	415	6	6	500	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	92	92	92	80	80	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	0	3	7	0	7	6	519	7	7	556	46
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1131	1131	301	827	1151	523	602	0	0	526	0	0
Stage 1	593	593	-	535	535	-	-	-	-	-	-	-
Stage 2	538	538	-	292	616	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	169	203	696	277	197	553	973	-	-	1039	-	-
Stage 1	460	493	-	528	523	-	-	-	-	-	-	-
Stage 2	526	521	-	692	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	165	199	696	272	193	553	973	-	-	1039	-	-
Mov Cap-2 Maneuver	165	199	-	272	193	-	-	-	-	-	-	-
Stage 1	456	488	-	523	518	-	-	-	-	-	-	-
Stage 2	515	516	-	682	476	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	28.1		15.2		0.1		0.1					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	973	-	-	180	365	1039	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.133	0.036	0.006	-	-				
HCM Control Delay (s)	8.7	0	-	28.1	15.2	8.5	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-				

Intersection						
Int Delay, s/veh	5.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	98	702	212	220	536
Future Vol, veh/h	43	98	702	212	220	536
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	131	836	252	272	662
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1711	418	0	0	1088	0
Stage 1	836	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	82	584	-	-	637	-
Stage 1	386	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 47	584	-	-	637	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	48.2	0		4.3		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	78	584	637	-
HCM Lane V/C Ratio	-	-	0.735	0.224	0.426	-
HCM Control Delay (s)	-	-	128.7	12.9	14.8	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	3.5	0.9	2.1	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	18.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	212	177	49	161	165	141
Future Vol, veh/h	212	177	49	161	165	141
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	80	80	75	75
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	283	236	61	201	220	188
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	262	0	-	0	863	62
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	802	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1302	-	-	-	324	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1302	-	-	-	243	999
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	440	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.6	0		47		
HCM LOS	E					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1302	-	-	-	243	999
HCM Lane V/C Ratio	0.217	-	-	-	0.905	0.188
HCM Control Delay (s)	8.5	0	-	-	79.1	9.4
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.8	-	-	-	7.8	0.7

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Traffic Vol, veh/h	1403	93	115	801	36	45
Future Vol, veh/h	1403	93	115	801	36	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	260	250	-	0	200
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	93	93	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1651	109	124	861	48	60
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1760	0	2330	826
Stage 1	-	-	-	-	1651	-
Stage 2	-	-	-	-	679	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	351	-	~ 31	315
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	351	-	~ 20	315
Mov Cap-2 Maneuver	-	-	-	-	72	-
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	465	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.6		65.5		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	72	315	-	-	351	-
HCM Lane V/C Ratio	0.667	0.19	-	-	0.352	-
HCM Control Delay (s)	123.6	19.1	-	-	20.7	-
HCM Lane LOS	F	C	-	-	C	-
HCM 95th %tile Q(veh)	3	0.7	-	-	1.5	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						
























Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	12	32	352	327	175
Future Vol, veh/h	68	12	32	352	327	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	100	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	80	80	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	16	40	440	363	194
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	883	363	557	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	316	682	1014	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	682	1014	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.1	0.7		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1014	-	304	682	-	-
HCM Lane V/C Ratio	0.039	-	0.298	0.023	-	-
HCM Control Delay (s)	8.7	-	21.8	10.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	0.1	-	-

ATTACHMENT 4

HCM 6th Signalized Intersection Summary 3: Buckwalter Pkwy & Hampton Hall Blvd/ Bluffton Pkwy

2029 Build PM

07/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	105	36	220	134	997	28	321	172	658	286	102
Future Volume (veh/h)	107	105	36	220	134	997	28	321	172	658	286	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	151	148	0	188	207	0	32	365	0	693	301	0
Peak Hour Factor	0.71	0.71	0.71	0.94	0.94	0.94	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	194		245	257		60	1139		801	1842	
Arrive On Green	0.11	0.11	0.00	0.14	0.14	0.00	0.03	0.32	0.00	0.23	0.52	0.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	151	148	0	188	207	0	32	365	0	693	301	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.2	9.1	0.0	11.4	12.0	0.0	2.0	8.7	0.0	21.6	5.0	0.0
Cycle Q Clear(g_c), s	9.2	9.1	0.0	11.4	12.0	0.0	2.0	8.7	0.0	21.6	5.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	194		245	257		60	1139		801	1842	
V/C Ratio(X)	0.78	0.76		0.77	0.80		0.53	0.32		0.87	0.16	
Avail Cap(c_a), veh/h	310	310		438	460		119	1139		1251	1842	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.5	48.4	0.0	46.5	46.8	0.0	53.2	28.8	0.0	41.3	14.2	0.0
Incr Delay (d2), s/veh	6.5	6.1	0.0	5.0	5.8	0.0	7.1	0.7	0.0	4.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	4.3	0.0	5.3	5.9	0.0	1.0	3.7	0.0	9.3	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	54.5	0.0	51.5	52.6	0.0	60.3	29.5	0.0	45.4	14.4	0.0
LnGrp LOS	E	D		D	D		E	C		D	B	
Approach Vol, veh/h		299	A		395	A		397	A		994	A
Approach Delay, s/veh		54.8			52.1			32.0			36.0	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	64.0		20.9	31.4	41.9		17.7				
Change Period (Y+Rc), s	5.5	* 6		5.5	5.5	* 6		5.5				
Max Green Setting (Gmax), s	7.5	* 58		27.5	40.5	* 25		19.5				
Max Q Clear Time (g_c+I1), s	4.0	7.0		14.0	23.6	10.7		11.2				
Green Ext Time (p_c), s	0.0	1.9		1.4	2.4	1.8		1.0				

Intersection Summary

HCM 6th Ctrl Delay 41.0

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Masters Way/Crossings Blvd & Bluffton Pkwy

2029 Build PM

07/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	913	34	191	1276	43	112	4	158	22	8	22
Future Volume (veh/h)	24	913	34	191	1276	43	112	4	158	22	8	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	1014	0	227	1519	51	149	5	211	30	11	30
Peak Hour Factor	0.90	0.90	0.90	0.84	0.84	0.84	0.75	0.75	0.75	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	1632		461	2264	1010	412	10	425	109	46	86
Arrive On Green	0.46	0.46	0.00	0.13	0.64	0.64	0.09	0.27	0.27	0.14	0.14	0.14
Sat Flow, veh/h	327	3554	1585	3456	3554	1585	1781	37	1551	507	329	612
Grp Volume(v), veh/h	27	1014	0	227	1519	51	149	0	216	71	0	0
Grp Sat Flow(s), veh/h/ln	327	1777	1585	1728	1777	1585	1781	0	1587	1448	0	0
Q Serve(g_s), s	7.7	29.1	0.0	8.2	36.6	1.6	9.3	0.0	15.4	2.8	0.0	0.0
Cycle Q Clear(g_c), s	20.3	29.1	0.0	8.2	36.6	1.6	9.3	0.0	15.4	5.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	0.42		0.42
Lane Grp Cap(c), veh/h	173	1632		461	2264	1010	412	0	435	242	0	0
V/C Ratio(X)	0.16	0.62		0.49	0.67	0.05	0.36	0.00	0.50	0.29	0.00	0.00
Avail Cap(c_a), veh/h	173	1632		461	2264	1010	439	0	435	242	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.6	27.6	0.0	54.3	15.5	9.2	42.1	0.0	41.2	52.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	1.8	0.0	3.7	1.6	0.1	0.5	0.0	4.0	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	12.6	0.0	3.8	14.4	0.6	4.2	0.0	6.6	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	29.4	0.0	58.0	17.1	9.3	42.6	0.0	45.2	55.1	0.0	0.0
LnGrp LOS	C	C		E	B	A	D	A	D	E	A	A
Approach Vol, veh/h	1041		A	1797			365			71		
Approach Delay, s/veh	29.5			22.1			44.1			55.1		
Approach LOS	C			C			D			E		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	24.0	68.0	18.0	25.0		92.0		43.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s	18.0	62.0	14.0	17.0		86.0		37.0				
Max Q Clear Time (g_c+10), s	10.2	31.1	11.3	7.5		38.6		17.4				
Green Ext Time (p_c), s	0.4	9.1	0.1	0.2		17.6		1.3				

Intersection Summary







HCM 6th Ctrl Delay 27.6






HCM 6th LOS C

Notes







Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	0	3	6	0	6	2	247	6	6	186	15
Future Vol, veh/h	27	0	3	6	0	6	2	247	6	6	186	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	90	90	90	75	75	75	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	0	4	7	0	7	3	329	8	7	221	18
Major/Minor	Minor2		Minor1		Major1				Major2			
Conflicting Flow All	587	587	120	464	592	333	239	0	0	337	0	0
Stage 1	244	244	-	339	339	-	-	-	-	-	-	-
Stage 2	343	343	-	125	253	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	407	421	909	495	418	708	1326	-	-	1221	-	-
Stage 1	739	703	-	675	639	-	-	-	-	-	-	-
Stage 2	671	637	-	866	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	400	417	909	489	414	708	1326	-	-	1221	-	-
Mov Cap-2 Maneuver	400	417	-	489	414	-	-	-	-	-	-	-
Stage 1	737	698	-	673	637	-	-	-	-	-	-	-
Stage 2	663	635	-	856	692	-	-	-	-	-	-	-
Approach	EB		WB		NB				SB			
HCM Control Delay, s	14.4		11.4		0.1				0.2			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1326	-	-	424	578	1221	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.094	0.023	0.006	-	-				
HCM Control Delay (s)	7.7	0	-	14.4	11.4	8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-				

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	50	469	40	61	526
Future Vol, veh/h	30	50	469	40	61	526
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	290	290	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	87	87	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	67	539	46	75	649
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1014	270	0	0	585	0
Stage 1	539	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	235	728	-	-	986	-
Stage 1	549	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	217	728	-	-	986	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 333 728	986	-		
HCM Lane V/C Ratio	-	- 0.12 0.092	0.076	-		
HCM Control Delay (s)	-	- 17.3 10.4	9	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.4 0.3	0.2	-		

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	30	39	109	70	45
Future Vol, veh/h	25	30	39	109	70	45
Conflicting Peds, #/hr	0	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	0	100
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	33	40	52	145	93	60
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	197	0	-	0	158	57
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	4.12	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1376	-	-	-	831	1006
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1376	-	-	-	810	1002
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	916	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.5	0		9.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1376	-	-	-	810	1002
HCM Lane V/C Ratio	0.024	-	-	-	0.115	0.06
HCM Control Delay (s)	7.7	0	-	-	10	8.8
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.2

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	904	31	41	1291	60	76
Future Vol, veh/h	904	31	41	1291	60	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	260	250	-	150	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	94	94	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	952	33	44	1373	80	101
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	985	0	1727	476
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	775	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	697	-	80	535
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	415	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	697	-	~ 75	535
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	415	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.3		23.9		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	535	-	-	697	-
HCM Lane V/C Ratio	0.423	0.189	-	-	0.063	-
HCM Control Delay (s)	37.3	13.3	-	-	10.5	-
HCM Lane LOS	E	B	-	-	B	-
HCM 95th %tile Q(veh)	1.9	0.7	-	-	0.2	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	21	11	134	127	62
Future Vol, veh/h	115	21	11	134	127	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	100	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	153	28	15	179	151	74
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	360	151	225	0	-	0
Stage 1	151	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	639	895	1344	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	632	895	1344	-	-	-
Mov Cap-2 Maneuver	632	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1344	-	632	895	-	-
HCM Lane V/C Ratio	0.011	-	0.243	0.031	-	-
HCM Control Delay (s)	7.7	-	12.5	9.2	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.9	0.1	-	-

Hilton Head Christian Academy
TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME:Bluffton Parkway at Masters Way/Crossing Boulevard

INTERSECTION CONDITION:Phase 1 (2020)

MAJOR STREET:Bluffton Parkway

MINOR STREET:Masters Way

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):N

COUNT

DATE: 14-Feb-18

OF APPROACH LANES:2

OF APPROACH LANES:2

	MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3			
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B							
									MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET					
THRESHOLD VALUES			600	200		900	100		480	160		720	80						
06:00 AM	TO	07:00 AM	0	0															
07:00 AM	TO	08:00 AM	1,615	136	Y			Y	Y	Y	Y			Y	Y	Y			
08:00 AM	TO	09:00 AM	1,816	208	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
09:00 AM	TO	10:00 AM	0	0															
10:00 AM	TO	11:00 AM	0	0															
11:00 AM	TO	12:00 PM	0	0															
12:00 PM	TO	01:00 PM	0	0															
01:00 PM	TO	02:00 PM	0	0															
02:00 PM	TO	03:00 PM	1,574	79	Y			Y			Y			Y					
03:00 PM	TO	04:00 PM	1,818	137	Y			Y	Y	Y	Y			Y	Y	Y			
04:00 PM	TO	05:00 PM	0	0															
05:00 PM	TO	06:00 PM	0	0															
06:00 PM	TO	07:00 PM	0	0															
07:00 PM	TO	08:00 PM	0	0															
08:00 PM	TO	09:00 PM	0	0															
09:00 PM	TO	10:00 PM	0	0															
			6,823	560	1			3			1			3			3	1	
						8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant
Condition A : Minimum Vehicular Volume
Condition B : Interruption of Continuous Traffic
Combination : Combination of Condition A and Condition B
WARRANT 2 -- Four-Hour Vehicular Volume Warrant
WARRANT 3 -- Peak Hour Warrant

Icard, Kevin

From: Colin, Heather
Sent: Wednesday, August 01, 2018 9:54 AM
To: Icard, Kevin
Subject: FW: Application by Christian Academy

Kevin --
Please include this letter in the staff report to Town Council.

Thank you,

Heather L. Colin, AICP
Director of Growth Management

Town of Bluffton
20 Bridge Street
Bluffton, SC 29910
Office (843)706-4592
Mobile (843)540-6946
www.townofbluffton.sc.gov



From: Orlando, Marc
Sent: Wednesday, August 01, 2018 9:45 AM
To: Colin, Heather <hcolin@townofbluffton.com>
Subject: FW: Application by Christian Academy

Marc Orlando
Town Manager, ICMA-CM
843-706-4511

Town of Bluffton
20 Bridge Street
PO Box 386
Bluffton, SC 29910
www.townofbluffton.sc.gov



From: Vaux Roberts <roberts.vaux@vmblawfirm.com>
Date: Wednesday, August 1, 2018 at 8:42 AM

ATTACHMENT #5

To: Lisa Sulka <lsulka@townofbluffton.com>, "Toomer, Larry" <ltoomer@townofbluffton.com>, Fred Hamilton <fhamilton@townofbluffton.com>, Harry Lutz <hlutz@townofbluffton.com>, WOOD DANIEL <dwood@hargray.com>

Cc: "morlando@townofbluffton.com" <morlando@townofbluffton.com>

Subject: Application by Christian Academy

Dear Mayor and Members of Council:

I own the property at 39 Pinecrest Way. As you are aware the Academy has applied for an amendment to its Master Plan.

Prior to my purchasing this property and making it my home, I reviewed the approved Master Plan. That plan located the football stadium in a north/south configuration as far from the residential areas as possible. The plan also has no separate gym/pac building.

The proposed plan locates the stadium as close to the residential areas as is possible and maintains the north/south configuration. It also locates a gym/pac building immediately adjacent to the residential areas. I am informed that the Academy plans on using the gym/pac building for public activities such as concerts, meetings, and other similar activities NOT related to the school. At the Planning Commission meeting, representatives of the Academy acknowledged to some limited extent this fact.

As you are aware there is a report from our Police Department, that during school hours there is a dangerous (the Department's word not mine) situation on Pinecrest Way. The proposed Master Plan Amendment has an entrance into the school grounds directly opposite Pinecrest Way. It has been reported, although not confirmed at this time, that International Paper which owns Masters Way is selling Masters Way to the Academy or some surrogate of the Academy. If the Academy purchases Masters Way it will permit it to allow parking along the street, set the speed limits, prevent speed bumps and otherwise control this street as to curb cuts. The combination of the ownership and the extension of Pinecrest Way into the school will simply exacerbate the already dangerous condition.

I purchased my home and moved into it in reliance on the existing Master Plan. I always realized that a Master Plan can be amended and in fact there are many aspects of the proposed amended plan that I do not oppose. What I do oppose and ask that you prevent, is an amendment that does not take into consideration the residents and property owners that are adjacent and who relied upon the approved plan when purchasing and making these properties their homes.

At the Planning Commission meeting I spoke and voiced my objections as stated above and I also asked a question. The question was and I ask it to you, "What are residential property owners to do to protect themselves, when they rely on an approved master plan that has the public and noise generating facilities as far from their property as is possible and then there is a request to move those same buildings/facilities immediately adjacent to the residential areas?"

At the DRT meeting the applicant was asked about the location of the stadium and the answer given was there was no way to achieve the concept the applicant was trying to achieve without the relocation. I am not a land planner, but it seems to me, that the applicant's desire to achieve a concept at the expense of the adjacent property owners is not equitable, but more importantly it sets a precedent and send a message to residents of the Town that they cannot rely on approved plans.

I am not opposed to the applicant's five buildings; I am not opposed to the applicant using its gym/pac building for public activities; I simply want them to adhere to what they said they were going to do, which was to locate those facilities as far from the residential areas as their property would allow. I also would like the Town to address the traffic situation so as to minimize the impact on Pinecrest Way to the greatest extent as is possible to include the prevention of parking along Masters Way and control of the traffic along Masters Way.

I would ask for your assistance.

Sincerely

Roberts Vaux
39 Pinecrest Way

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Icard, Kevin

From: Orlando, Marc
Sent: Wednesday, July 25, 2018 10:27 AM
To: Colin, Heather; Icard, Kevin
Subject: FW: Hilton Head Christian Academy Master Plan Concerns

Marc Orlando
Town Manager, ICMA-CM
843-706-4511

Town of Bluffton
20 Bridge Street
PO Box 386
Bluffton, SC 29910
www.townofbluffton.sc.gov



From: Lisa Sulka <lsulka@townofbluffton.com>
Date: Wednesday, July 25, 2018 at 9:55 AM
To: "morlando@townofbluffton.com" <morlando@townofbluffton.com>, Mayor & Council <towncouncil@townofbluffton.com>
Subject: Fwd: Hilton Head Christian Academy Master Plan Concerns

Council. I have forwarded all emails relating to
This project to Marc. He will make sure all of
These concerns are addressed tonight at planning commission.

Lisa
lsulka@townofbluffton.com

Begin forwarded message:

From: Jerry Reichert <jwr2069@yahoo.com>
Date: July 24, 2018 at 4:45:32 PM EDT
To: "lsulka@townofbluffton.com" <lsulka@townofbluffton.com>, "fhamilton@townofbluffton.com" <fhamilton@townofbluffton.com>, "ltoomer@townofbluffton.com" <ltoomer@townofbluffton.com>, "hlutz@townofbluffton.com" <hlutz@townofbluffton.com>, "dwood@townofbluffton.com" <dwood@townofbluffton.com>
Cc: Linda Thompson <lthompson52@hotmail.com>, Keri Bell <ktvdaa@gmail.com>, Trista Di Novo <tasha@imchhi.com>
Subject: Hilton Head Christian Academy Master Plan Concerns

Dear Mayor and Council members:

ATTACHMENT #5

As a member of the Pinecrest community, we are concerned with the Proposed Hilton Head Christian Academy (HHCA) Campus Master Plan and Open Space Plan layout and creation dated 05-30-2018. Being a resident of Crossings Blvd, the traffic is already a nightmare to exit the community from Crossings Blvd and turn left (east) on to Bluffton Parkway at certain times of the day. With the addition of HHCA on Masters Way, this will further increase the traffic pattern in that area, making it almost IMPOSSIBLE to exit on to Bluffton Parkway going east.

I STRONGLY SUGGEST THAT A THOROUGH TRAFFIC STUDY BE CONDUCTED FOR ALTERNATE TRAFFIC PATTERNS AND A TRAFFIC LIGHT BE INSTALLED AT THE INTERSECTION OF CROSSINGS BLVD AND BLUFFTON PARKWAY. *(Already there have been numerous accidents and deaths at this intersection).* For those Pinecrest residents, living on the south side of Bluffton Parkway, they have been already experiencing cut through traffic from Bluffton High School on to our streets (Pinecrest Way/Pinecrest Drive) and parking by non-residents at our Amenity Center. The addition of HHCA is going to further compound these issues as well as increased noise from their new stadium and inadequate on-campus parking, which will potentially create parking and pass through problems Pinecrest is already experiencing.

Thank you in advance for your consideration on these matters.

Sincerely,
Jerry Reichert
Crossings Blvd.
Pinecrest Resident

Sent from [Mail](#) for Windows 10

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Icard, Kevin

From: Orlando, Marc
Sent: Wednesday, July 25, 2018 10:27 AM
To: Colin, Heather; Icard, Kevin
Subject: FW: HHCA PLANS

Marc Orlando
Town Manager, ICMA-CM
843-706-4511

Town of Bluffton
20 Bridge Street
PO Box 386
Bluffton, SC 29910
www.townofbluffton.sc.gov



From: Lisa Sulka <lsulka@townofbluffton.com>
Date: Wednesday, July 25, 2018 at 9:54 AM
To: "morlando@townofbluffton.com" <morlando@townofbluffton.com>
Subject: Fwd: HHCA PLANS

Lsulka@townofbluffton.com

Begin forwarded message:

From: Marie Kowalchuk <mkowalchuk@ameritech.net>
Date: July 24, 2018 at 5:56:16 PM EDT
To: lsulka@townofbluffton.com, fhamilton@townofbluffton.com, hltz@townofbluffton.com,
dwood@townofbluffton.com, ltoomer@townofbluffton.com
Subject: HHCA PLANS

As a resident of Pinecrest, I am asking for stronger oversight on the current proposed plans.

Buildings with inappropriate parking spaces and additional traffic at drop off and pick up times causes hazards and encroachment on an existing community.

I recommend a more reasonable analysis of this site and vision on how to prevent the disturbances that will ensue if the current proposal is adopted.

Have you no interest in those who will be affected?

ATTACHMENT #5

I've been impressed in the past with your decision making but not in this case unless you have changes made that address the concerns of Pinecrest residents.

Thank you

Marie Kowalchuk
161 Pinecrest Circle
Bluffton 8
Mkowalchuk@ameritech.net

Mobile 773-230-5210

Sent from my iPad

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Hilton Head Christian Academy Football

Bluffton, SC

Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
F1-F4	70'	15'	2	TLC-BT-575	1.15 kW	A
		70'	11	TLC-LED-1150	12.65 kW	A
4			52		55.20 kW	

Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Football/Soccer	55.2 kW	52

Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1150	LED 5700K - 75 CRI	1150W	121,000	>81,000	>81,000	>81,000	44
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>81,000	>81,000	>81,000	8

Light Level Summary

Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
150' Blanket Spill	Horizontal Illuminance	3.37	0	28.1	7866981.00		A	52
Adjacent Property Spill	Horizontal	0	0	0	33708.50		A	52
Adjacent Property Spill	Max Candela (by Fixture)	5.80	0.08	30.4	379.65	72.52	A	52
Adjacent Property Spill	Max Vertical Illuminance Metric	0	0	0	3162.37		A	52
Football	Horizontal Illuminance	52.5	38	61	1.59	1.38	A	52
Soccer	Horizontal Illuminance	51.8	38	61	1.59	1.36	A	52

ATTACHMENT #6

From Hometown to Professional

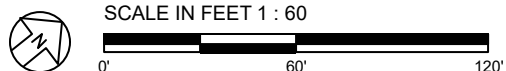
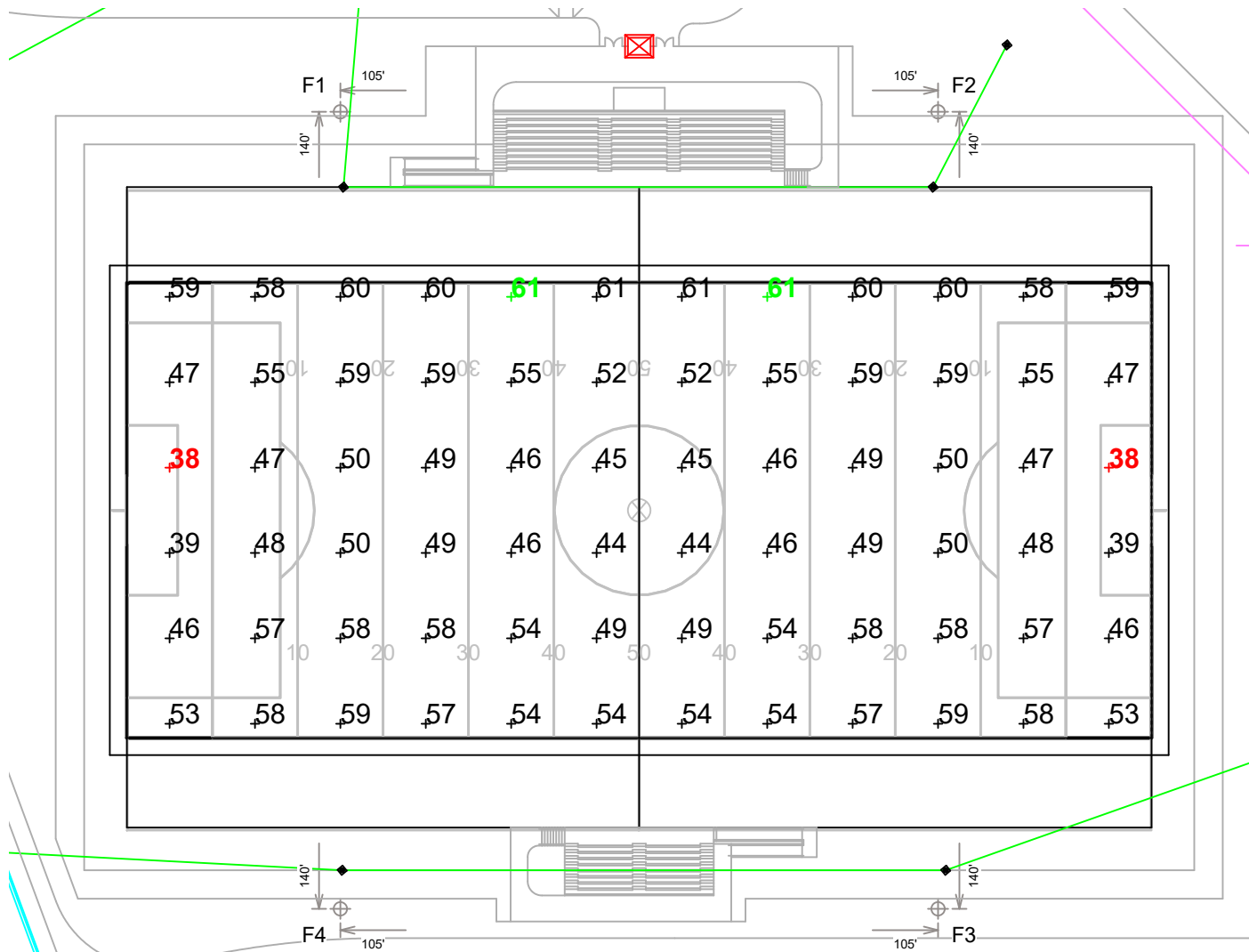


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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	11	11	0
4	TOTALS					52	52	0



ENGINEERED DESIGN By: Shawn Moyer • File #193585 • 19-Jul-18

Pole location(s) ⦿ dimensions are relative to 0,0 reference point(s) ⊗

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC

GRID SUMMARY

Name: Football
Size: 360' x 160'
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid	
Guaranteed Average:	50
Scan Average:	52.51
Maximum:	61
Minimum:	38
Avg / Min:	1.38
Guaranteed Max / Min:	2
Max / Min:	1.59
UG (adjacent pts):	1.25
CU:	0.59
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 52
Total Load: 55.2 kW

Lumen Maintenance			
Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

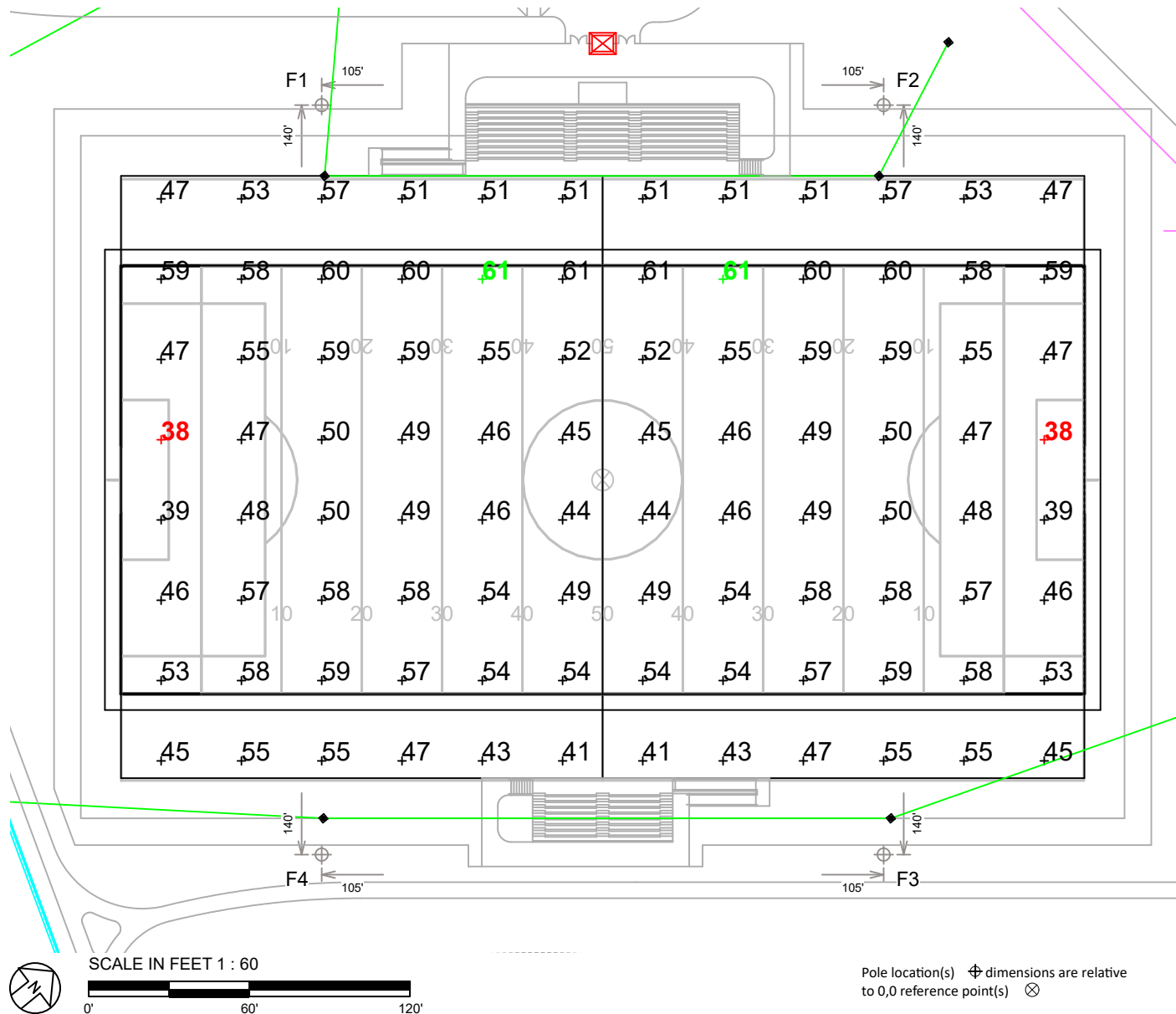


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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	F1-F4	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	11	11	0
4	TOTALS					52	52	0



ENGINEERED DESIGN By: Shawn Moyer • File #193585 • 19-Jul-18

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC

GRID SUMMARY

Name: Soccer
Size: 360' x 225'
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid	
Guaranteed Average:	50
Scan Average:	51.82
Maximum:	61
Minimum:	38
Avg / Min:	1.36
Guaranteed Max / Min:	2
Max / Min:	1.59
UG (adjacent pts):	1.33
CU:	0.77
No. of Points:	96

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 / 52,000 lumens
No. of Luminaires:	52
Total Load:	55.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



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ILLUMINATION SUMMARY

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC

GRID SUMMARY	
Name:	150' Blanket Spill
Size:	360' x 225'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY			
MAINTAINED HORIZONTAL FOOTCANDLES			
	Entire Grid		
Scan Average:	3.3745		
Maximum:	28.12		
Minimum:	0.00		
CU:	0.14		
No. of Points:	276		
LUMINAIRE INFORMATION			
Color / CRI:	5700K - 75 CRI		
Luminaire Output:	121,000 / 52,000 lumens		
No. of Luminaires:	52		
Total Load:	55.2 kW		
Lumen Maintenance			
Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
Reported per TM-21-11. See luminaire datasheet for details.			

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

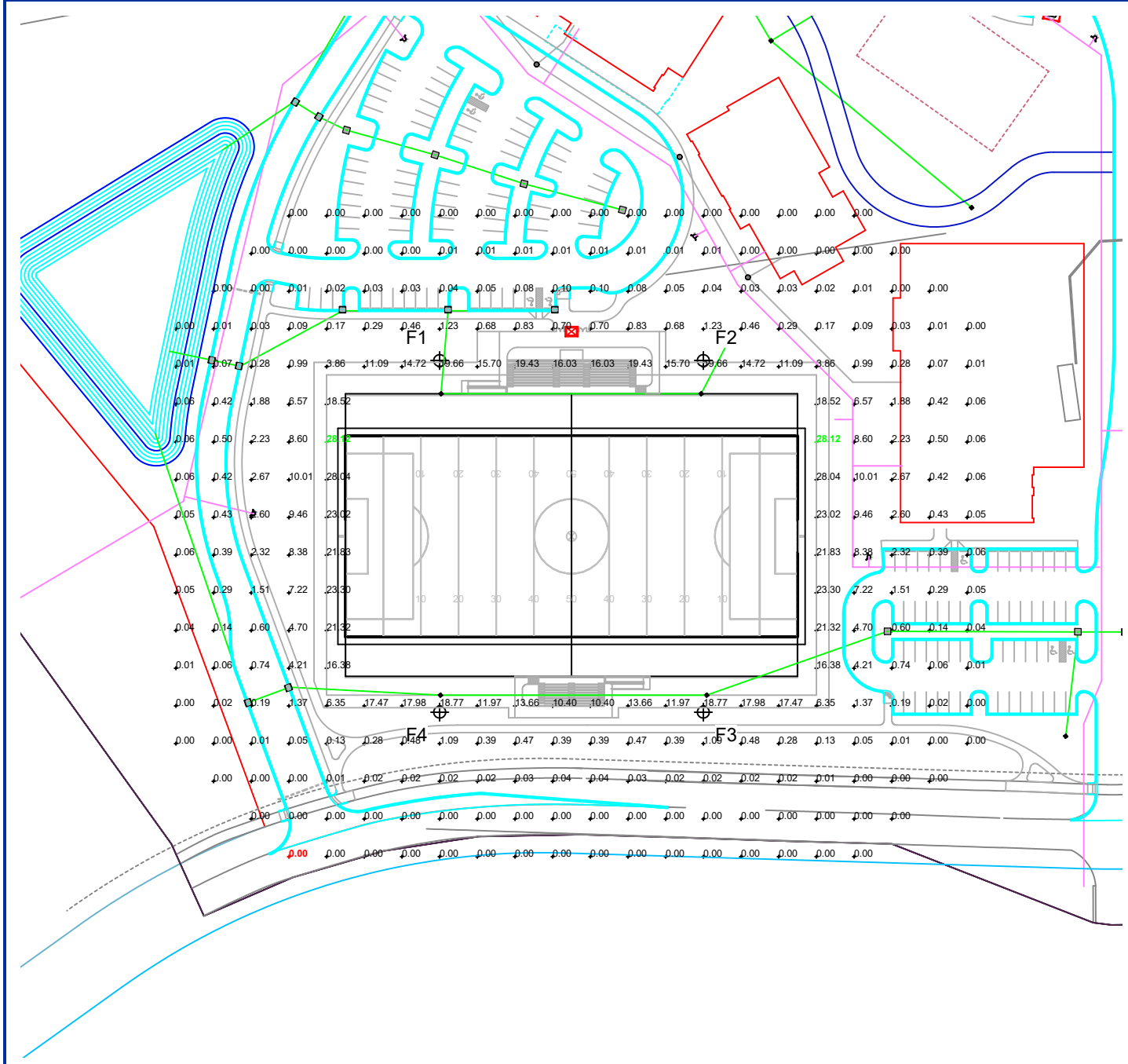
Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

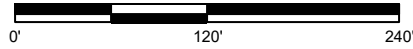


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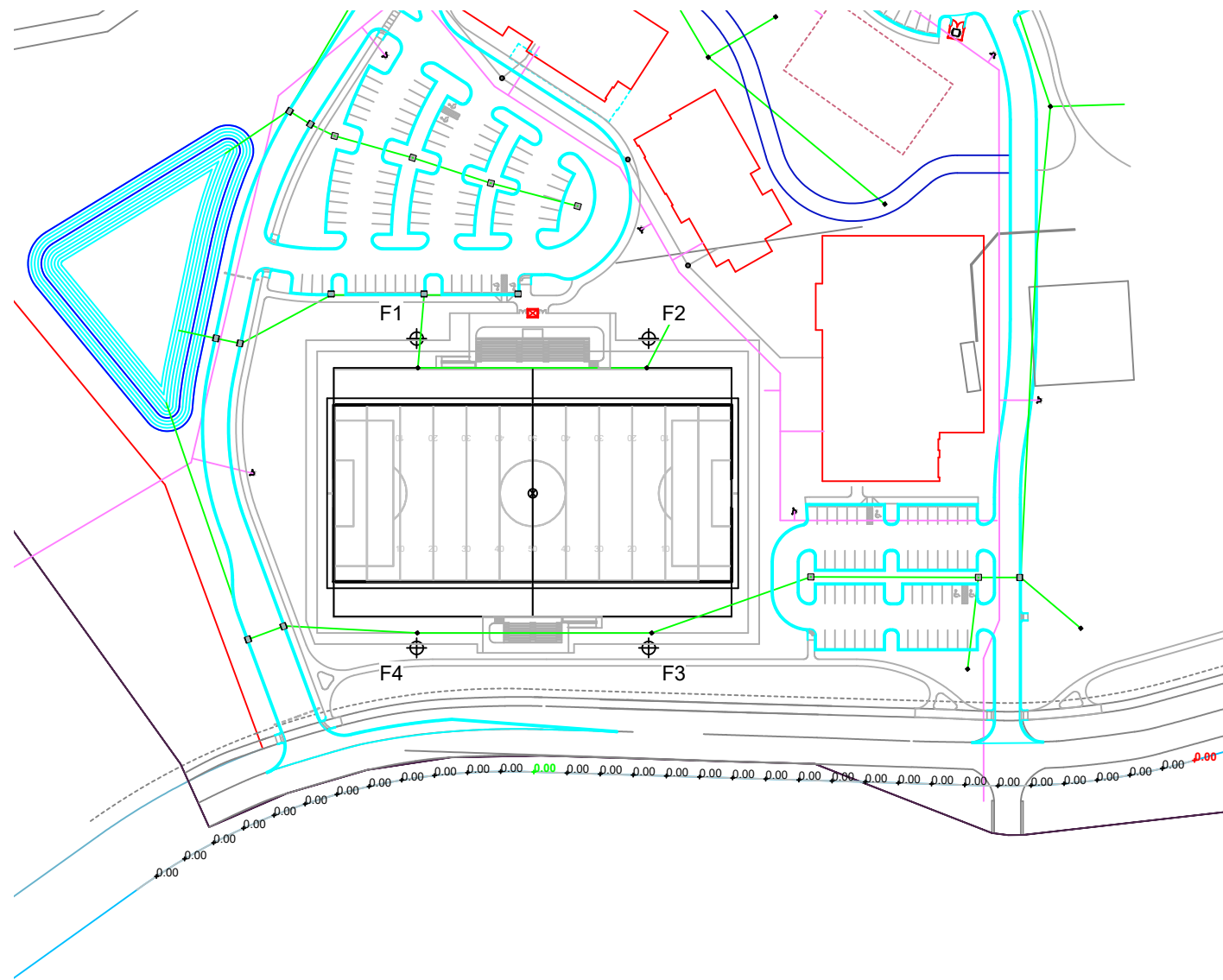
SCALE IN FEET 1 : 120



Pole location(s) ⊗ dimensions are relative to 0,0 reference point(s) ⊗

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC



GRID SUMMARY	
Name:	Adjacent Property Spill
Spacing:	30.0'
Height:	3.0' above grade

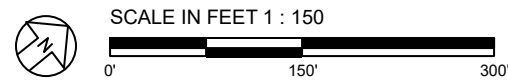
ILLUMINATION SUMMARY			
MAINTAINED HORIZONTAL FOOTCANDLES			
	Entire Grid		
Scan Average:	0.0000		
Maximum:	0.00		
Minimum:	0.00		
No. of Points:	33		
LUMINAIRE INFORMATION			
Color / CRI:	5700K - 75 CRI		
Luminaire Output:	121,000 / 52,000 lumens		
No. of Luminaires:	52		
Total Load:	55.2 kW		
Lumen Maintenance			
Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
Reported per TM-21-11. See luminaire datasheet for details.			

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Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Pole location(s) \oplus dimensions are relative to 0,0 reference point(s) \otimes

ENGINEERED DESIGN By: Shawn Moyer • File #193585 • 19-Jul-18



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ILLUMINATION SUMMARY

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC

GRID SUMMARY	
Name:	Adjacent Property Spill
Spacing:	30.0'
Height:	3.0' above grade

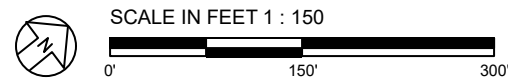
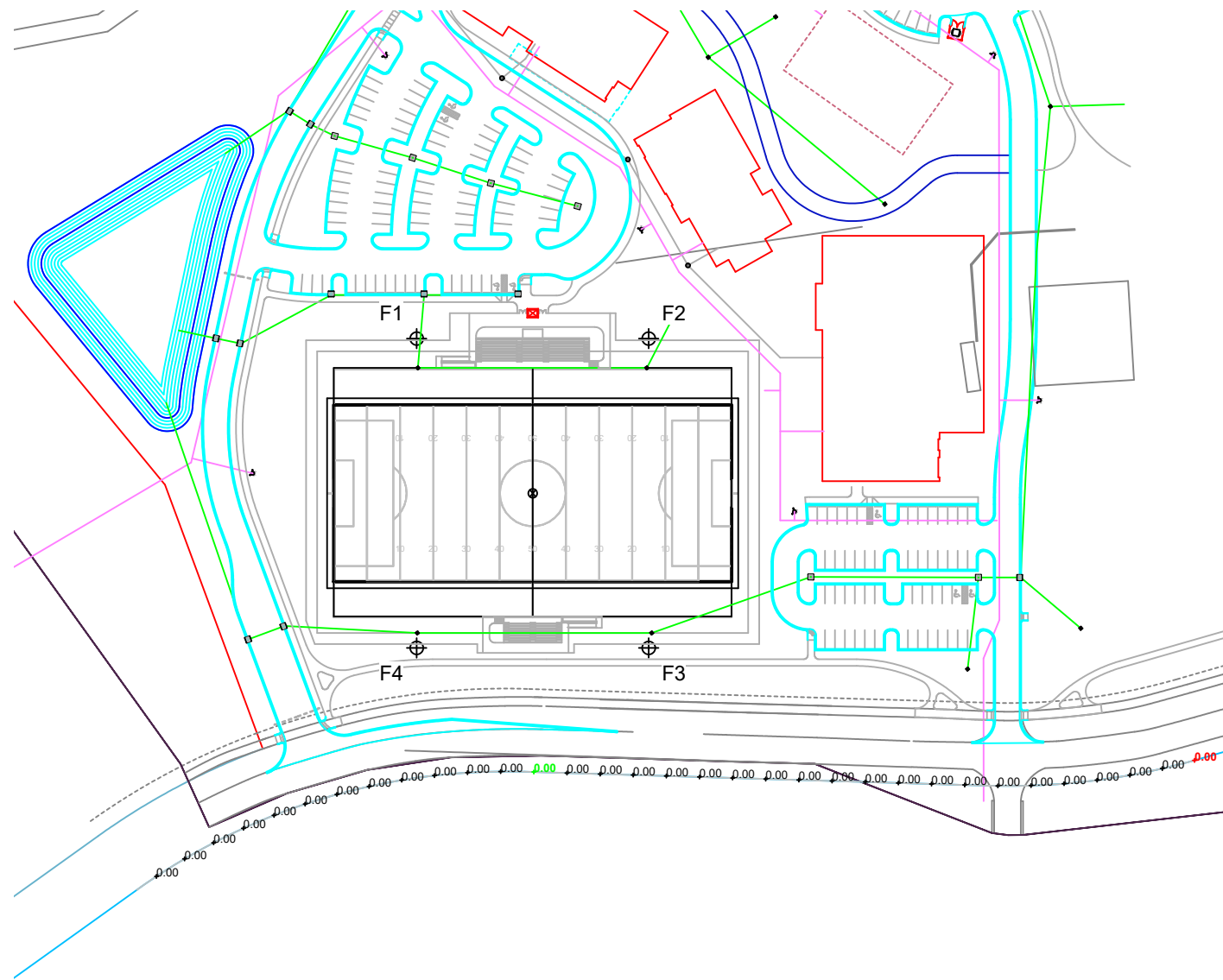
ILLUMINATION SUMMARY			
MAINTAINED MAX VERTICAL FOOTCANDLES			
	Entire Grid		
Scan Average:	0.0001		
Maximum:	0.00		
Minimum:	0.00		
No. of Points:	33		
LUMINAIRE INFORMATION			
Color / CRI:	5700K - 75 CRI		
Luminaire Output:	121,000 / 52,000 lumens		
No. of Luminaires:	52		
Total Load:	55.2 kW		
Lumen Maintenance			
Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
Reported per TM-21-11. See luminaire datasheet for details.			

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Pole location(s) \oplus dimensions are relative to 0,0 reference point(s) \otimes

ENGINEERED DESIGN By: Shawn Moyer • File #193585 • 19-Jul-18



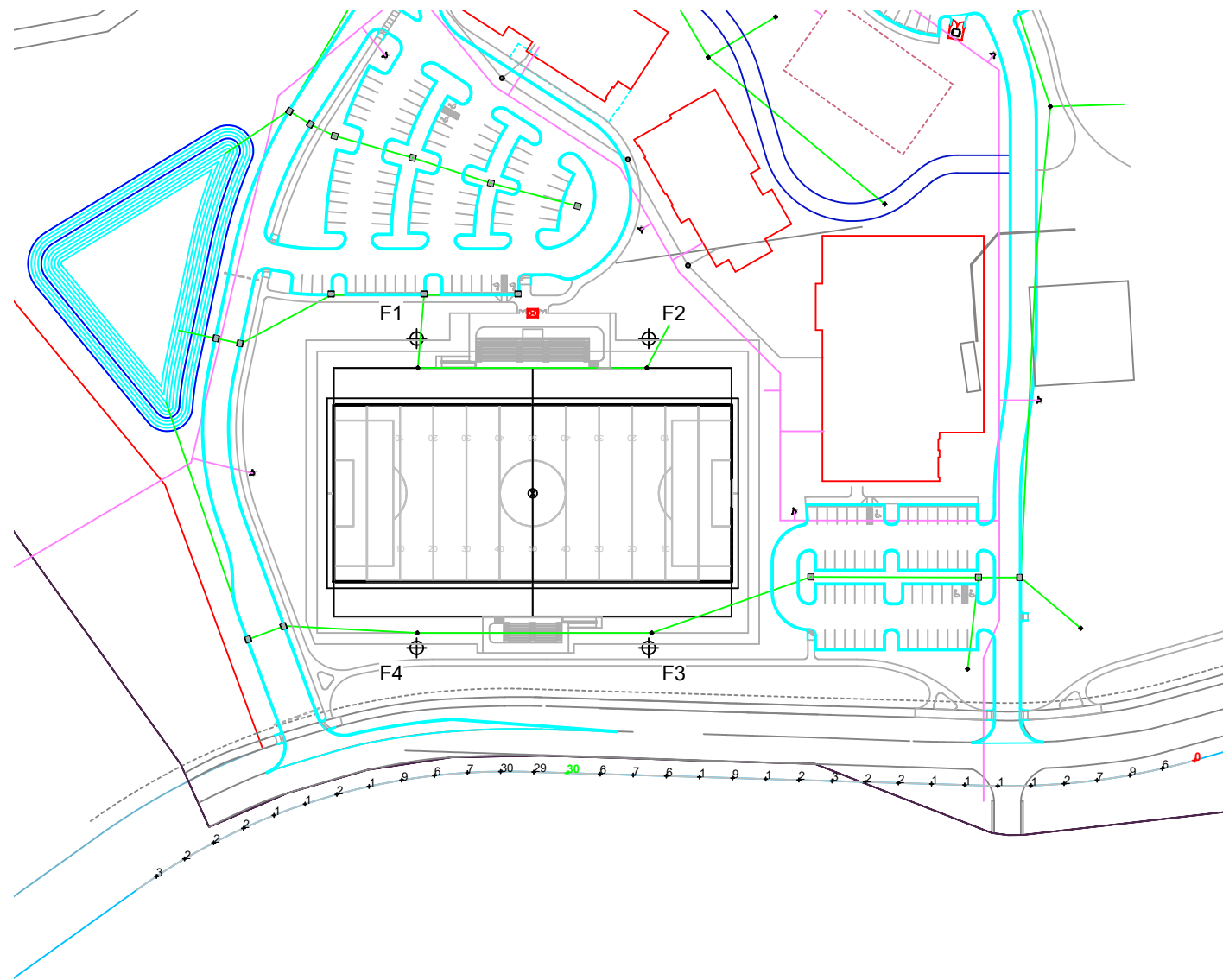
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ILLUMINATION SUMMARY

ATTACHMENT #6

Hilton Head Christian Academy Football
Bluffton, SC



GRID SUMMARY	
Name:	Adjacent Property Spill
Spacing:	30.0'
Height:	3.0' above grade

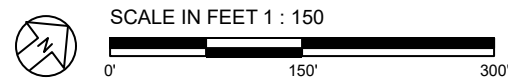
ILLUMINATION SUMMARY			
MAINTAINED CANDELA (PER FIXTURE)			
	Entire Grid		
Scan Average:	5.8017		
Maximum:	30.44		
Minimum:	0.08		
No. of Points:	33		
LUMINAIRE INFORMATION			
Color / CRI:	5700K - 75 CRI		
Luminaire Output:	121,000 / 52,000 lumens		
No. of Luminaires:	52		
Total Load:	55.2 kW		
Lumen Maintenance			
Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>81,000	>81,000	>81,000
TLC-BT-575	>81,000	>81,000	>81,000
Reported per TM-21-11. See luminaire datasheet for details.			

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Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Pole location(s) \oplus dimensions are relative to 0,0 reference point(s) \otimes



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GLARE IMPACT

Summary

Map indicates the maximum candela an observer would see when facing the brightest light source from any direction.

A well-designed lighting system controls light to provide maximum useful on-field illumination with minimal destructive off-site glare.

GLARE

Candela Levels

High Glare: 150,000 or more candela

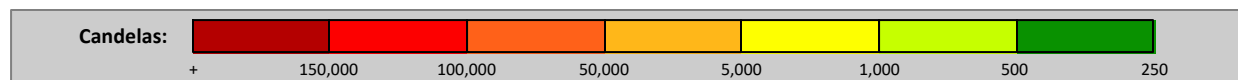
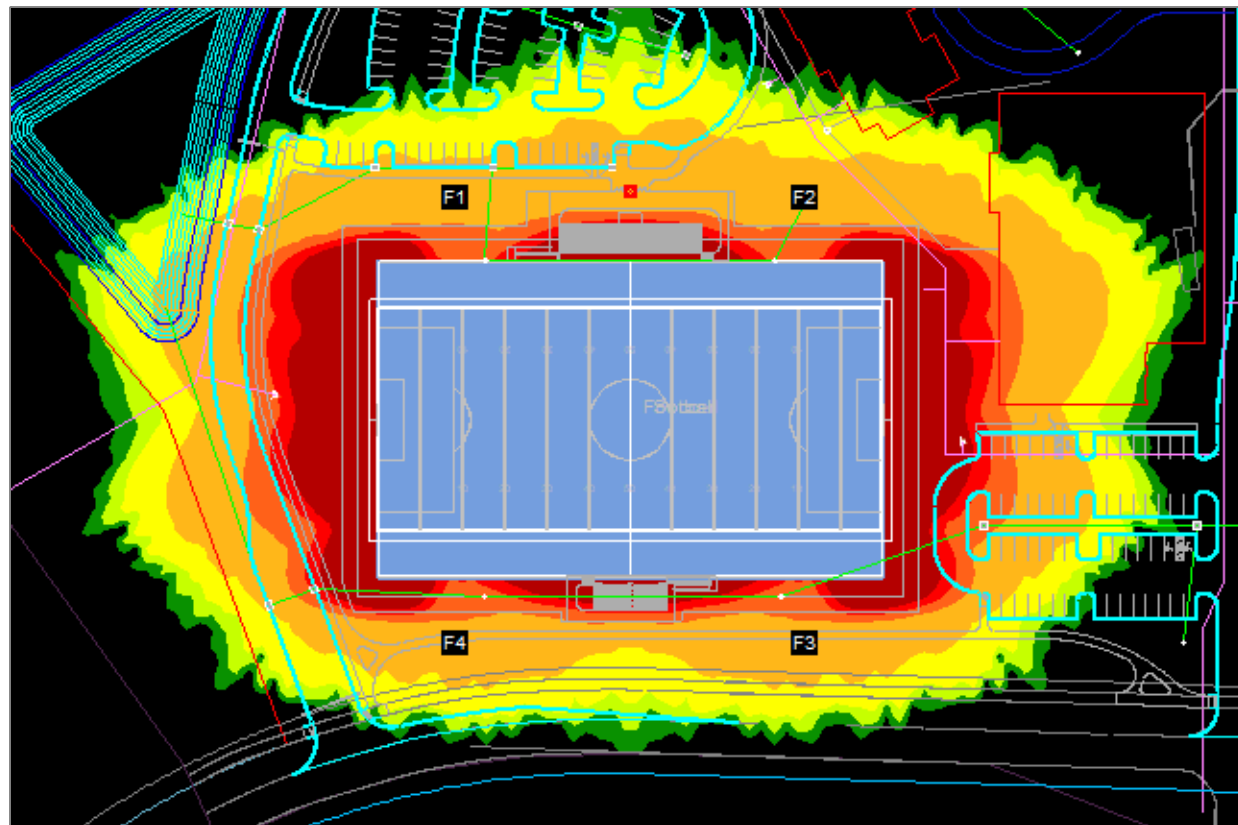
Should only occur on or very near the lit area where the light source is in direct view. Care must be taken to minimize high glare zones.

Significant Glare: 25,000 to 75,000 candela

Equivalent to high beam headlights of a car.

Minimal to No Glare: 500 or less candela

Equivalent to 100W incandescent light bulb.



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Control System Summary

Project Specific Notes:

Project Information

Project #: 193585
Project Name: Hilton Head Christian Academy Football
Date: 07/19/18
Project Engineer: Shawn Moyer
Sales Representative: Brian Hartman
Control System Type: Control and Monitoring
Communication Type: Digital Cellular
Scan: 193585
Document ID: 193585P1V1-0719141500
Distribution Panel Location or ID: Football/Soccer
Total # of Distribution Panel Locations for Project: 1
Design Voltage/Hertz/Phase: 480/60/3
Control Voltage: 120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE	
1. Control and Monitoring Cabinet	24 X 48	
	QTY	SIZE
Total Contactors	4	30 AMP
Total Off/On/Auto Switches:	1	

Materials Checklist

Contractor/Customer Supplied:

- ☐ A single control circuit must be supplied per distribution panel location.
 - If the control voltage is NOT available, a control transformer is required.
- ☐ Electrical distribution panel to provide overcurrent protection for circuits
 - Thermal/Magnetic circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ☐ Wiring:
 - Dedicated control power circuit
 - Power circuit to and from lighting contactors
 - Harnesses for cabinets at remote locations
 - Means of grounding, including lightning ground protection
- ☐ Electrical conduit wireway system
 - Entrance hubs rated NEMA 4: must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ☐ Mounting hardware for cabinets
- ☐ Control circuit lock-on device to prevent unauthorized power interruption to control power
- ☐ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.
Note: Activation may take up to 1 1/2 hours

IMPORTANT NOTES

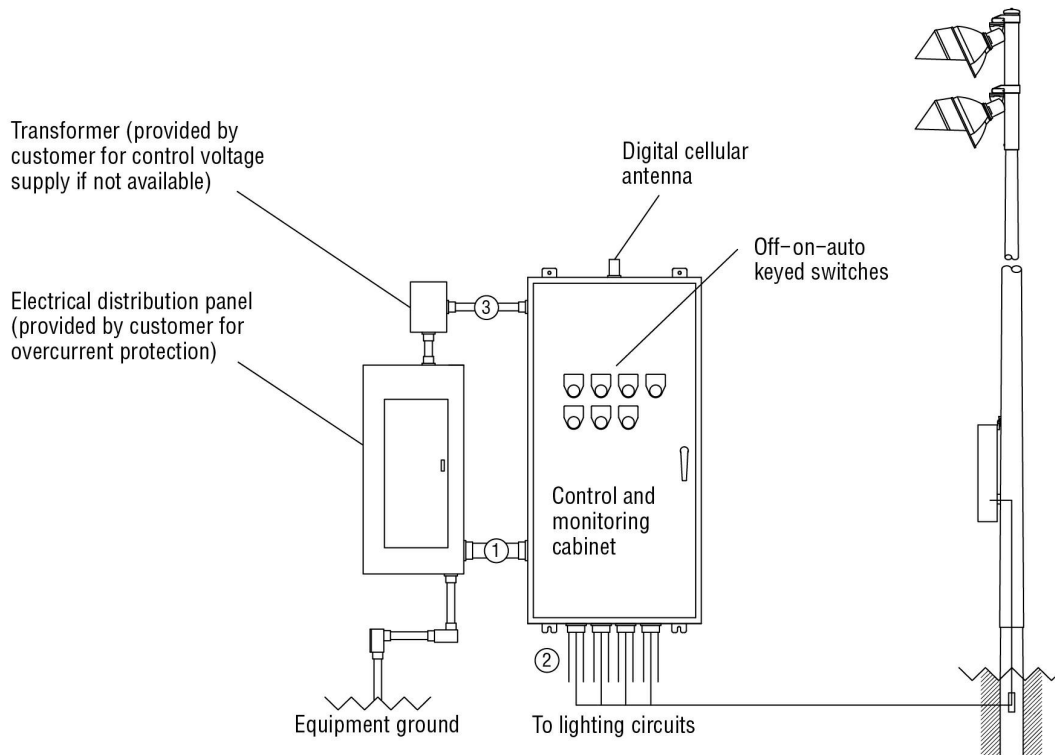
1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's ballast enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are UL 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements

Control System Summary

Hilton Head Christian Academy Football / 193585 - 193585
Football/Soccer - Page 2 of 4

Control•Link® Control and Monitoring System



Wire	Description	# of Wires	Typ. Wire Size (AWG)	Max. Wire Length (FT)	Wire from Musco	Notes
1	Line power to contactors, and equipment grounding conductor	Note A	Note B	27	No	A – E
2	Load power to lighting circuits	Note A	Note B	N/A	No	A – D
3	Control power (dedicated, 20A)	3	12	N/A	No	C, D

R60-32-00_C

Notes:

- A. Voltage and phasing per the notes on cover page.
- B. Calculate per load and voltage drop.
- C. All conduit diameters should be per code.
- D. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.
- E. Contact Musco if maximum wire length from circuit breaker to contactor exceeds value in chart.

IMPORTANT: Control (3) wires must be in separate conduit from line and load power wiring (1, 2).



Control System Summary

Hilton Head Christian Academy Football / 193585 - 193585
Football/Soccer - Page 3 of 4

SWITCHING SCHEDULE

Field/Zone Description	Zones
Football/Soccer	1

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 508.0
	SEALED: 118.0

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
F1	Football/Soccer	13	13	21.7	30	C1	1
F2	Football/Soccer	13	13	21.7	30	C2	1
F3	Football/Soccer	13	13	21.7	30	C3	1
F4	Football/Soccer	13	13	21.7	30	C4	1

*Full Load Amps based on amps per driver.



Control System Summary

Hilton Head Christian Academy Football / 193585 - 193585
Football/Soccer - Page 4 of 4

PANEL SUMMARY						
CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole F1	21.70		
1	1	C2	Pole F2	21.70		
1	1	C3	Pole F3	21.70		
1	1	C4	Pole F4	21.70		

ZONE SCHEDULE				
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Football/Soccer	F1	C1
			F2	C2
			F3	C3
			F4	C4

Sweetleaf Swamp, LLC

P.O. Box 746, Mt. Pleasant, South Carolina 29465-0746
Phone 843/388-6585 FAX 843/388-6580

July 17, 2018

Hilton Head Christian Academy
c/o Jeff Williams
Sligh Environmental Consultants, Inc.
J_Williams@Slighec.com

**RE: Mitigation for Hilton Head Christian Academy-Bluffton Campus
Permit # SAC-2017-01921
Beaufort County, SC**

Dear Mr. Lott:

We are pleased to advise you that 5.2 preservation credits and 5.1 non-buffer enhancement restoration credits in the Sweetleaf Swamp Mitigation Bank have been conveyed to you to enable you to meet the compensatory mitigation requirements for the activity described in SAC-2017-01921, Beaufort County, South Carolina. It is our understanding that the appropriate federal and state regulatory bodies have agreed to accept these credits as compensatory mitigation for the wetland impacts authorized by the referenced permit. Use of these credits is governed by the Sweetleaf Swamp Mitigation Bank Plan approved by the US Army Corps of Engineers (COE) and COE Permit # SAC-27-2005-0698-G.

Please be advised that these credits are available only for mitigation of impacts associated with your referenced permit. The credits may not be sold, transferred, conveyed or otherwise used for any purpose, including mitigation of any other activities, without the express written permission of the permitting agencies and Sweetleaf Swamp, LLC.

We are pleased to have been able to assist you in this matter and stand ready to provide any additional services you may require from us in the future.

Sincerely,



Ken Hance
Sweetleaf Swamp, LLC
Charleston, South Carolina

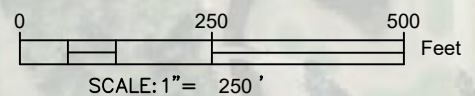
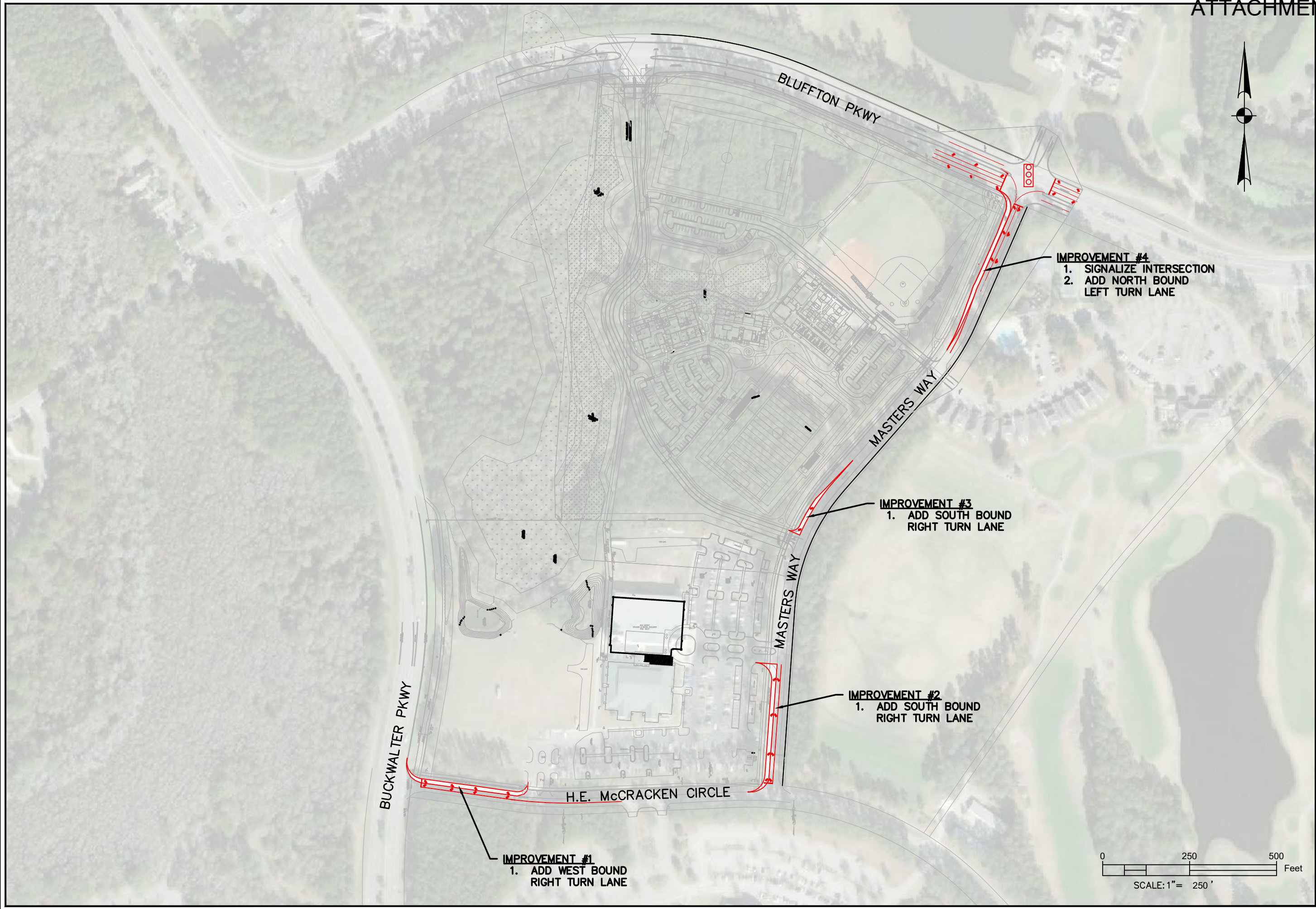
cc: David Wilson, US Army Corps of Engineers
Curtis Joyner, South Carolina DHEC-OCRM

TRAFFIC IMPROVEMENTS

HILTON HEAD CHRISTIAN ACADEMY

TOWN OF BLUFFTON, SOUTH CAROLINA

P.O. BOX 381
BLUFFTON, SC 29910
PH (843) 837-5250
FAX (843) 837-2558
WWW.WARDEDWARDS.COM



IMPROVEMENT #1
1. ADD WEST BOUND
RIGHT TURN LANE

IMPROVEMENT #2
1. ADD SOUTH BOUND
RIGHT TURN LANE

IMPROVEMENT #3
1. ADD SOUTH BOUND
RIGHT TURN LANE

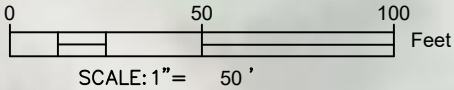
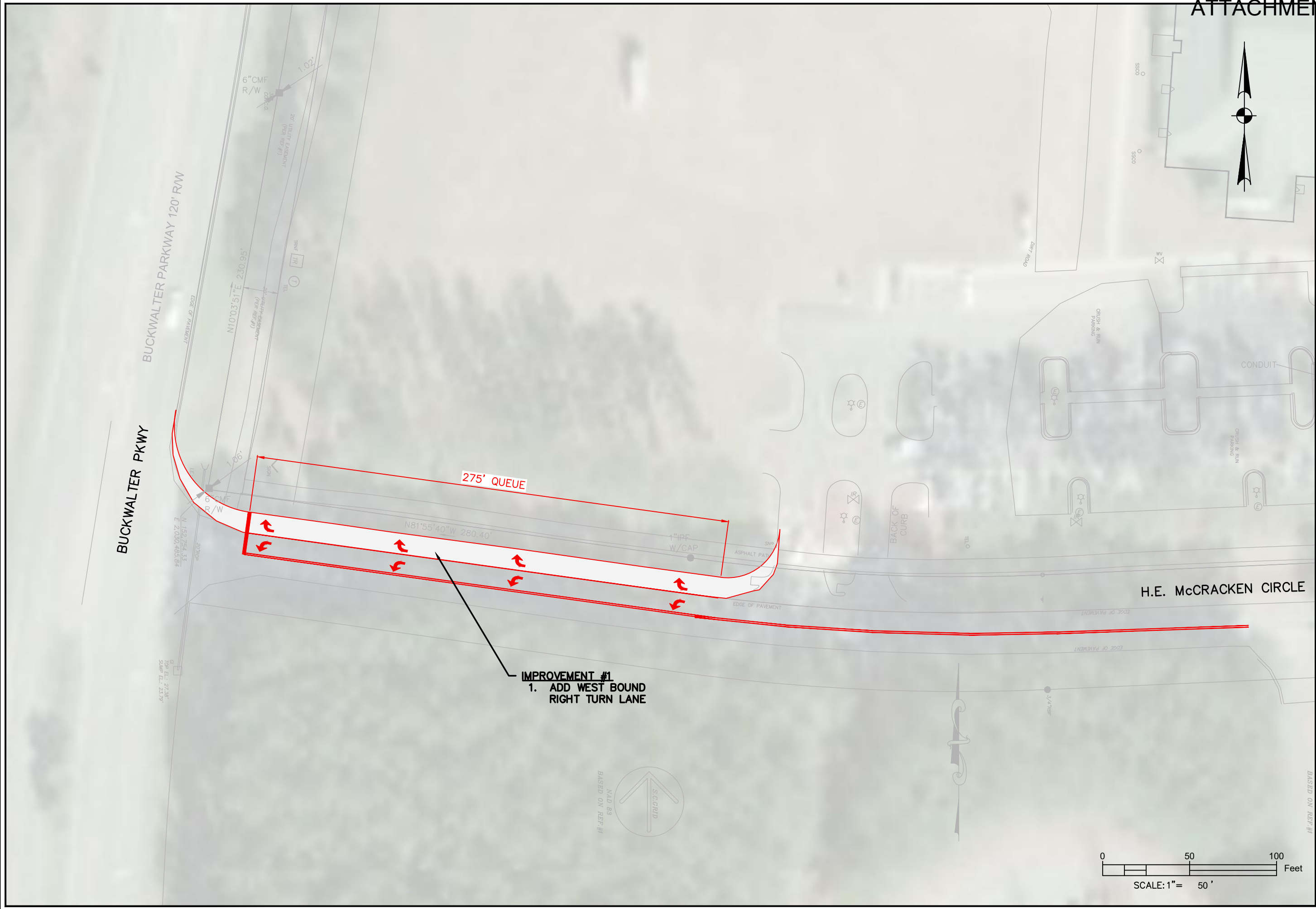
IMPROVEMENT #4
1. SIGNALIZE INTERSECTION
2. ADD NORTH BOUND
LEFT TURN LANE

TRAFFIC IMPROVEMENTS

HILTON HEAD CHRISTIAN ACADEMY

TOWN OF BLUFFTON, SOUTH CAROLINA

P.O. BOX 381
BLUFFTON, SC 29910
PH (843) 837-5250
FAX (843) 837-2558
WWW.WARDEDWARDS.COM



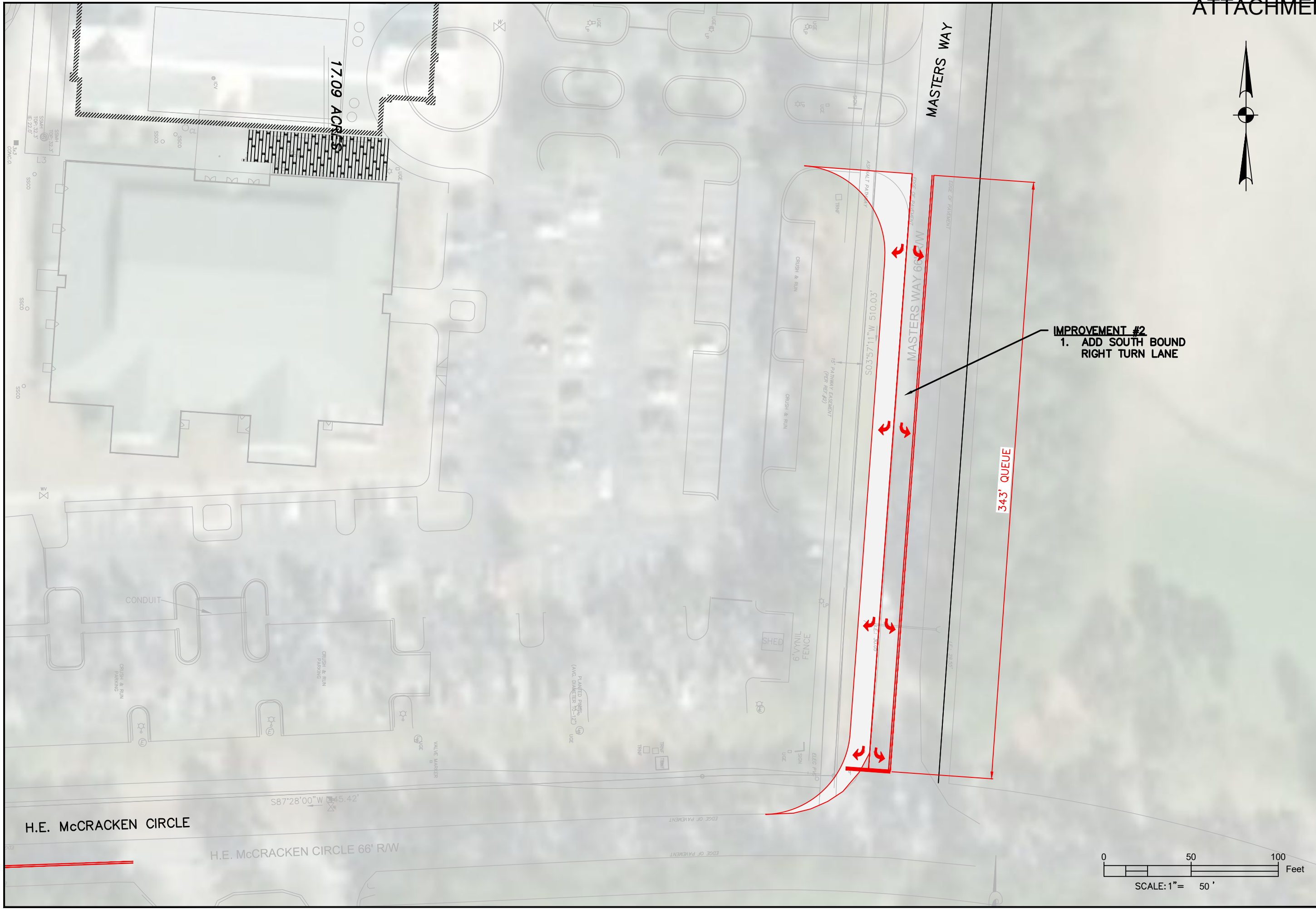
IMPROVEMENT #1
1. ADD WEST BOUND
RIGHT TURN LANE

275' QUEUE

N81°55'40"W 280.40'

BUCKWALTER PKWY
BUCKWALTER PARKWAY 120' R/W

H.E. McCRACKEN CIRCLE



TRAFFIC IMPROVEMENTS

HILTON HEAD CHRISTIAN ACADEMY

TOWN OF BLUFFTON, SOUTH CAROLINA

P.O. BOX 381
BLUFFTON, SC 29910
PH (843) 837-5250
FAX (843) 837-2558
WWW.WARDEDWARDS.COM



IMPROVEMENT #2
1. ADD SOUTH BOUND
RIGHT TURN LANE

343' QUEUE

MASTERS WAY

MASTERS WAY 66' R/W

S03°57'11"W 510.03'

6' VINYL FENCE

SHED

PLANTED PINES
(AVG. DIAMETER 10"-12")

VALVE MARKER

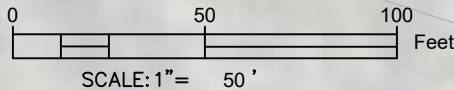
CRUSH & RUN
PARKING

CRUSH & RUN
PARKING

CONDUIT

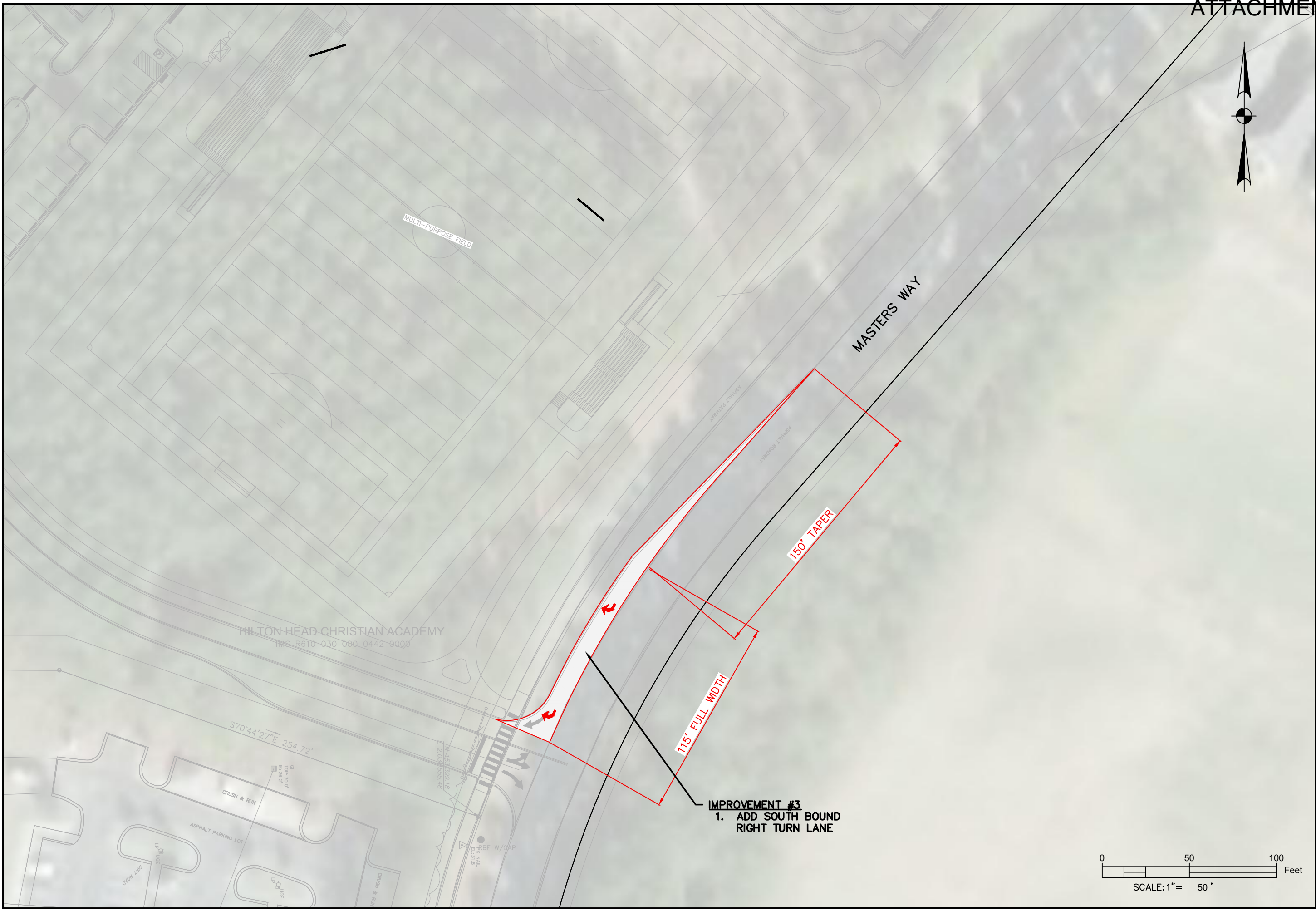
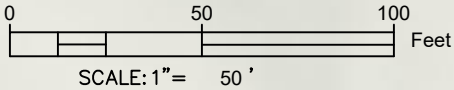
H.E. McCracken Circle

H.E. McCracken Circle 66' R/W



TRAFFIC IMPROVEMENTS
HILTON HEAD CHRISTIAN ACADEMY
TOWN OF BLUFFTON, SOUTH CAROLINA

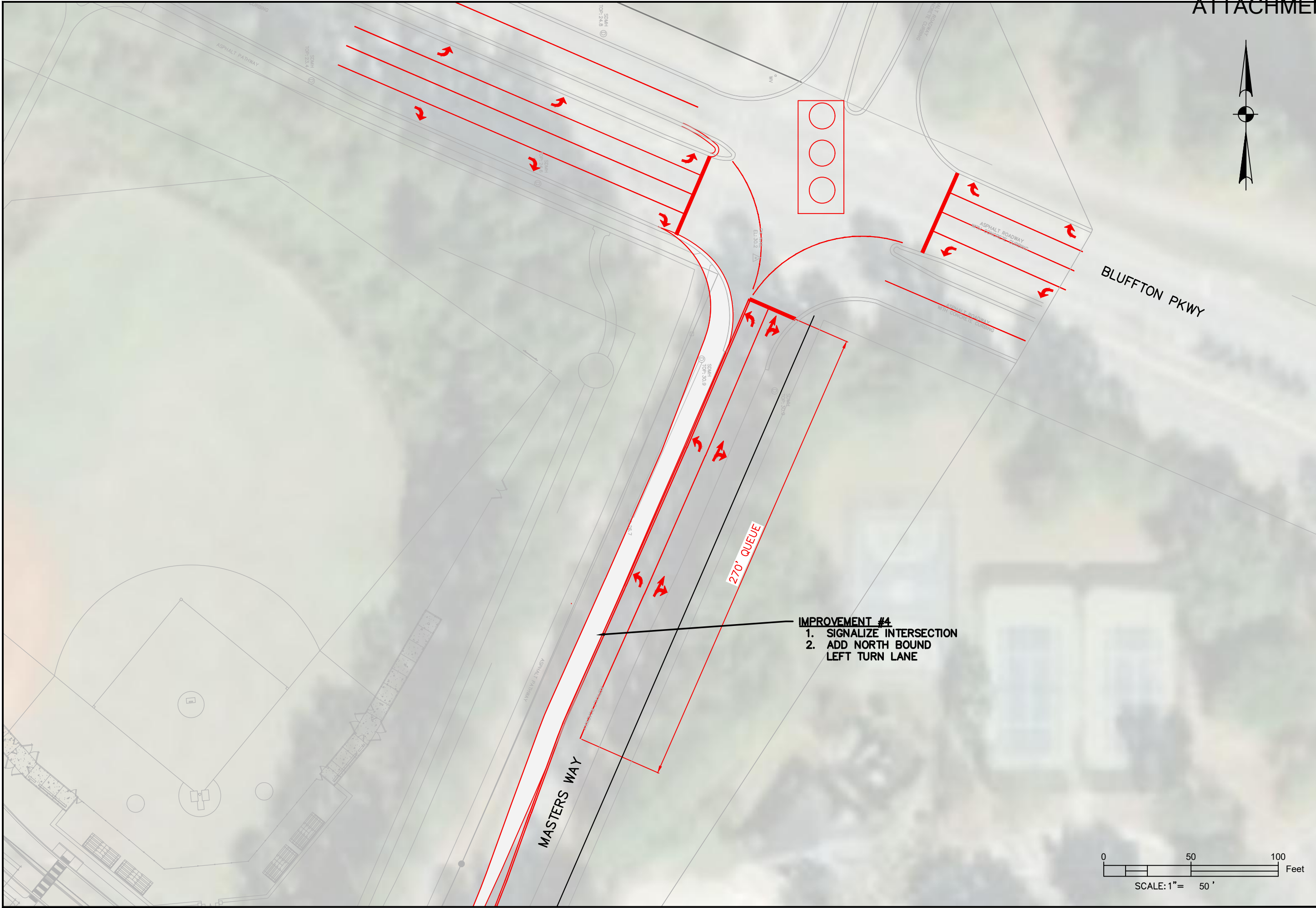
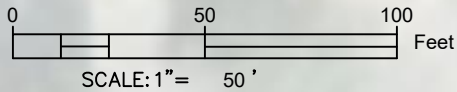
P.O. BOX 381
BLUFFTON, SC 29910
PH (843) 837-5250
FAX (843) 837-2558
WWW.WARDEDWARDS.COM



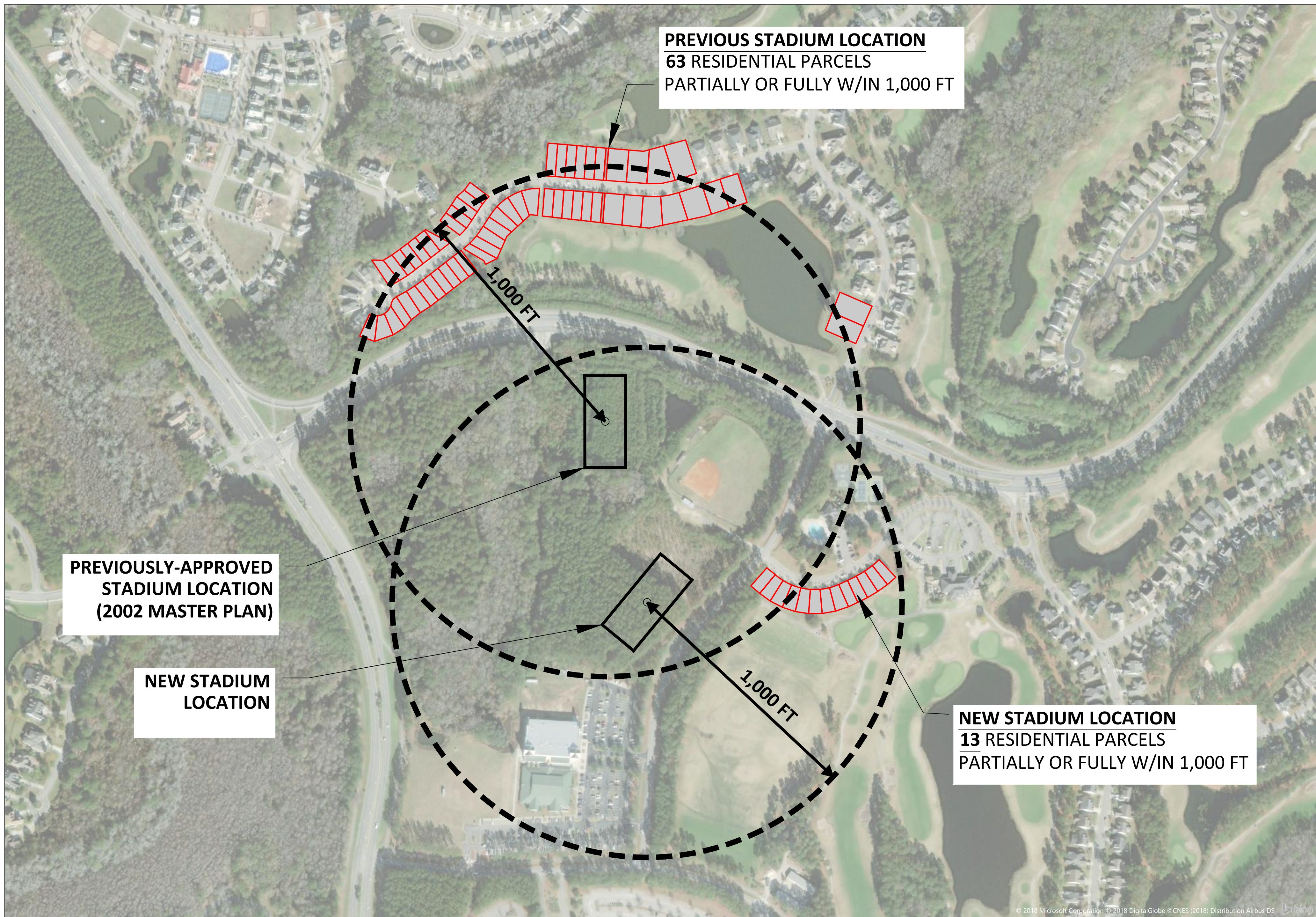
IMPROVEMENT #3
1. ADD SOUTH BOUND
RIGHT TURN LANE

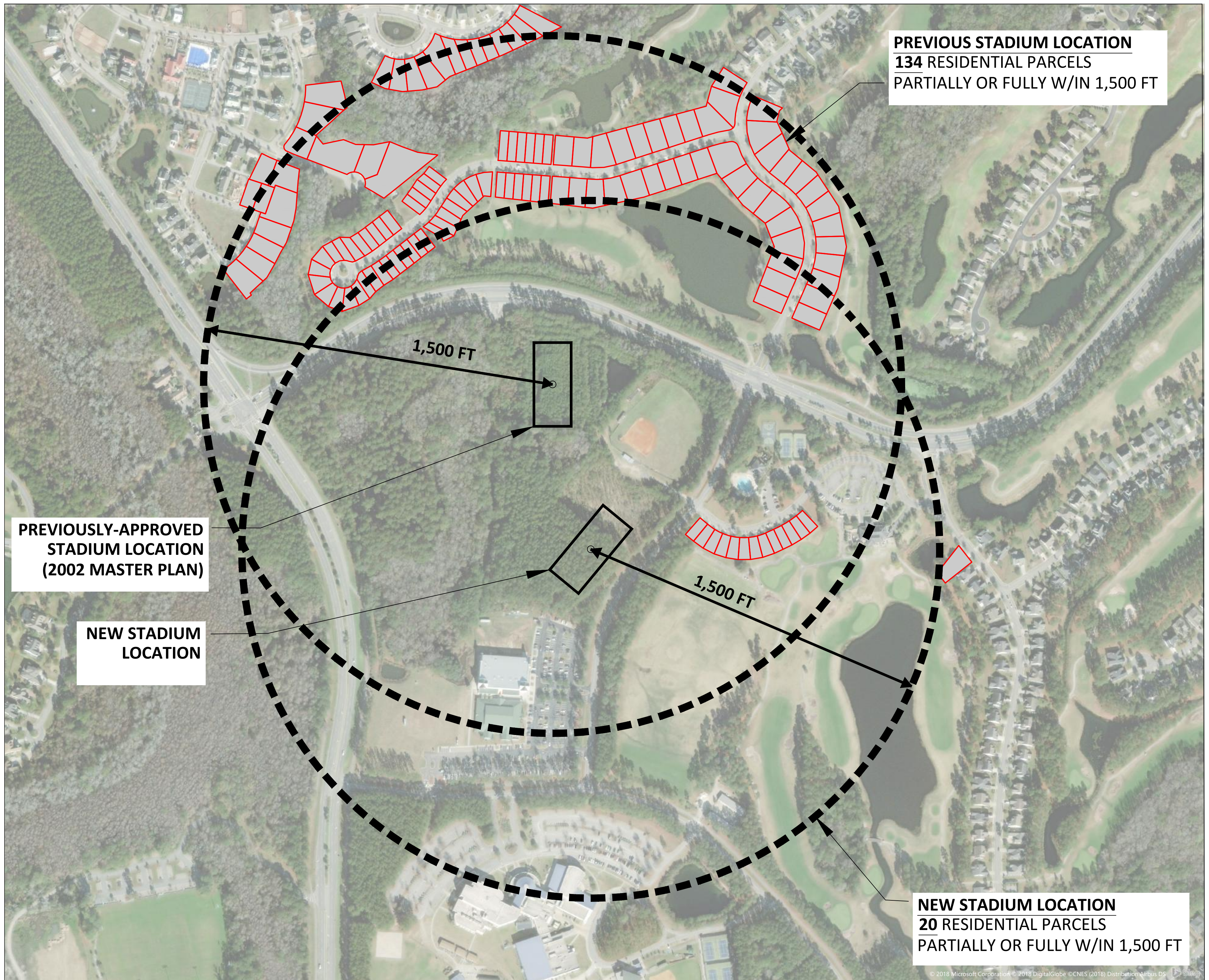
TRAFFIC IMPROVEMENTS
HILTON HEAD CHRISTIAN ACADEMY
TOWN OF BLUFFTON, SOUTH CAROLINA

P.O. BOX 381
BLUFFTON, SC 29910
PH (843) 837-5250
FAX (843) 837-2558
WWW.WARDEDWARDS.COM



- IMPROVEMENT #4**
- 1. SIGNALIZE INTERSECTION
 - 2. ADD NORTH BOUND LEFT TURN LANE





Proposed Recommended Motion

Consideration of Approval of an Amendment to the Master Plan for property referred to as Hilton Head Christian Academy – Bluffton Campus within the Buckwalter Planned Unit Development for a new K-12 School Campus and Supporting Athletic Facilities on approximately 27.78 acres located near the intersection of Bluffton Parkway and Masters Way

“I move to approve the request to amend the Master Plan Amendment for Hilton Head Christian Academy with the following conditions;

1. The following improvements must be completed prior to the issuance of a Certificate of Occupancy for the Administration and Elementary School Building:
 - a) Optimize the signal timing splits at the Bluffton Parkway at Buckwalter Parkway/Hampton Hall Boulevard intersection;
 - b) Install a westbound right-turn lane on H.E. McCracken Circle at the Buckwalter Parkway at H.E. McCracken Circle (north) intersection;
 - c) Redesign and signalize the intersection of Bluffton Parkway at Masters Way/Crossings Boulevard to meet the current Beaufort County standards, install a northbound left-turn lane on Masters Way, and review the design criteria of the intersection including sight distance, turn radii, etc.;
 - d) Install a southbound right-turn lane on Masters Way at the H.E. McCracken Circle (north) intersection;
 - e) Design the Bluffton Parkway at Site Driveway #1 intersection to current Beaufort County standards including a review of the design criteria of the intersection including sight distance, turn radii, etc.;
 - f) Include exclusive left-turn and right-turn lanes exiting the site at the Site Driveway #1 onto Bluffton Parkway;
 - g) Install a southbound right-turn lane on Masters Way at Site Driveway #3;
 - h) Include exclusive left-turn and right-turn lanes exiting the site at Site Driveway #3 onto Bluffton Parkway;
 - i) Stratify the bell schedule from existing schools in area to limit overlap of traffic;
 - j) Stagger upper and lower school bell schedules;
 - k) Coordinate with the Pinecrest neighborhood regarding Site Driveway #2; and,
 - l) Coordinate with the Town of Bluffton on an event management plan as needed.
2. Require that Hilton Head Christian Academy’s parents and students not use Pinecrest Way as a through traffic into the Pinecrest community by installing signs at all driveways exiting the property.
3. Move the proposed Football/Soccer Stadium to a location that is not adjacent to the Pinecrest community along Masters Way.

4. The 30 ft. buffer located along Master Way and the 50 ft. buffer located along Bluffton Parkway shall not be disturbed and additional understory shrubs and trees shall be installed, as needed, to create an opaque buffer along Masters Way and Bluffton Parkway similar to the requirements set forth in Section 4.23.2.1 Highway Buffer in the Beaufort County (ZDSO) 90/3.
5. Any lights used for athletic fields must be designed to have a foot-candle reading of zero at the property line and glare shields will be used on all lights to prevent excessive glare off site.
6. The Applicant must mitigate the 33" Black Gum proposed for removal, as shown on the tree survey, with the same species totaling the same number of inches in diameter as stated in Section 5.2.7.4 Site Design Emphasis on Significant Trees (Beaufort County ZDSO 90/3). Approximately thirteen (13) 2.5" DBH Black Gum trees on the property with placement approved through the Development Plan review process.